



SATURDAY, SEPTEMBER 11, 1875.

Contributions.

Angle Plates.

TO THE EDITOR OF THE RAILROAD GAZETTE:

A remarkable instance of the strength of the angle-plate joint was given at Prairie Creek trestle, four miles west of Washington, Ind., on the Ohio & Mississippi Railway, during the recent floods. Two bents of the above trestle were completely washed out, leaving 56 feet of track without any support from either bents or stringers, the rails remaining in perfect position excepting an even deflection of about three feet at the greatest point. There were two angle plates to each joint, one on each side; had there been but one, it is evident that the necessary strength to support the weight would have been wanting. The track thus suspended, supporting a 14 feet roadway, double stringers and the guard rails, was used as a thoroughfare during several days by the trackmen engaged in repairing the "wash-outs" east and west of this trestle. The ties on the trestle were eight inches face and were one foot from center to center. The deflection of the 56 feet was perfectly regular, and none of the angle plates were even bent, and were again used when the track was re-established. The Ohio & Mississippi uses angle plates 26 inches long, 9-1/2 inch thick, weighing 13 pounds each, slotted three inches from the ends and held by four % bolts.

Every joint is suspended between the ties, and the track is laid with "broken joints." Since two years all new iron and steel has this joint, and with track so laid with the angle plates as above it has given very satisfactory results, for during that period not a single plate has been broken or bent, and as near a continuous rail attained as can be well imagined. Experiments have proved the advantage not only of a single angle plate on one side and a common fish-plate on the other over two fish-plates, but also of two angle plates over the preceding joint. These experiments were made as follows: Six 30-feet rails were joined with the three different arrangements as above; they were supported at the ends and in the center. The center supports were then moved apart gradually, until the results were determined and which proved the great advantage of the two angle plates for each joint. The expense of this joint on the Ohio & Mississippi is, with the present price of iron, but 22 cents more than for the two ordinary fish-plates formerly used. A wooden washer % inch thick is used, steeped in crude petroleum. By its elasticity it absorbs the shock, and the nuts remain tight. It is found that petroleum prevents the changes of humidity from alternately shrinking and swelling the wood. The cost of this joint at present is 90 cents. The angle plates are rolled by the St. Louis Bolt & Iron Company.

Proposed Combination of Southern Railroads.

Under the head of "Insolvency of Southern Railroads, the Cause and Remedy," an anonymous circular has been issued, which reads as follows. It is noticeable, whatever may be its practical effect, for recognizing certain facts in the economy of competitive business which are too often ignored:

In ante-bellum days Southern railroads were prosperous, dividends were earned, confidence in their securities induced investments upon which families were dependent for support. Now, stock dividends are almost unknown, a large proportion of roads have defaulted upon their interest, and have either been sold or are in the hands of trustees or receivers. Some cannot pay running expenses and make good depreciation, and the future presents no cheering prospects even to the most solvent.

What is the cause of this great depreciation in values and in revenue? The volume of business has not been materially reduced. The cotton crop, which furnishes the bulk of south and east-bound freights, still maintains its average of about four millions of bales, and the return supplies are measured in quantity by the population, and in kind and value, to some extent, by its ability to purchase. Reductions in volumes, in neither direction, would account for the almost total destruction of net revenues.

To what, then, must these disastrous consequences be attributed? They result chiefly from two causes. *The multiplication of competing lines and the reduction of rates.*

Where mineral resources can be developed, or manufacturing industries stimulated, the increase of lines and reduction of rates may not always result in loss, owing to increased volumes of tonnage, which reduce per ton the cost of transportation. On Northern roads, carrying annually several millions of tons, the cost of movement per ton per mile is less than one cent. On the best of the Southern roads, the actual cost is 2 1/2 cents per ton per mile, and the average more. The bulk of agricultural products is affected by the number of laborers—not by rates. And the multiplication of lines, while affording local accommodation, divides business and compels an increase of charges to pay the operating expenses on increased mileage and the interest on increased capital.

The whole cotton crop of the South is about 900,000 tons. Assuming an equal amount of other freights, the whole business of all the roads in the South, if concentrated on a single line, would not equal one-fourth of the tonnage of the Pennsylvania or the Reading railroad.

The increase of new lines, by dividing the business at competitive points, is, therefore, one cause of reduced receipts.

But still more disastrous results to the railway interest, and indirectly to the public prosperity, may be traced to the unnecessary and ruinous reductions of rates that have followed a reckless competition.

Lines have been represented by soliciting agents at competitive points, vested with almost unlimited discretion, bidding against each other for patronage, unscrupulous as to the means employed to influence consignees, anxious to give proof of devotion to their employers by securing tonnage regardless of income, so that very little competitive freight is carried at rates sufficient to cover actual cost, including general and all other expenses, and much of it for little above cost of running trains.

The general opinion of railroad managers appears to be that

it is preferable to secure business at any margin, however slight, above the cost of movement, rather than abandon it altogether, and a reduction on one line is sure to be followed by all others.

It might be supposed that the public would be benefitted by such competition, but this is not correct. The slight increase in market values that would be required to secure fair remuneration to transporters would be absolutely inappreciable, and would neither retard production nor reduce consumption.

For example: A pound of cotton makes two and eight-tenths yards of standard yard-wide sheeting, worth ten cents per yard. The addition of a single mill per pound to the transportation charges on cotton would add two millions of dollars to the net revenues of the lines, and a charge for transportation on the raw material which would raise the price one-seventh of a cent per yard on cotton cloth, or its equivalent in other cotton products, would increase the net revenues of the lines to the extent of eight millions of dollars annually, and much of this additional tax of one-seventh of a cent per yard would be paid by consumers in foreign countries and in other States. The burden, slight as it would be, would not fall upon the South.

Carry out this principle to include tobacco, dry goods, coffee and numerous articles, the value of which is large in proportion to cost of transportation, and there is no room to question the truth of the assertion, that even ten millions of dollars could be added to the net revenues of Southern railroads without imposing any hardships upon the people or injuriously affecting any public interest.

How many roads in the South are now in a dangerous condition from worn out rails and rotten bridges, ties and trestles? The increase of rates will add to the safety and comfort of travellers, by enabling companies to introduce improvements—air brakes, smooth track, new cars, increased speed, and safe structures. Such improved accommodations will far outweigh the slight tax necessary to secure them.

The cause of railroad insolvency has been stated—the remedy remains to be considered.

Existing roads, even if too numerous—if their construction was unwise—cannot be blotted out. The greater the amount of capital sunk in their construction, the cheaper can they be operated to pay interest on what remains. Superfluous roads may be thorns, parasites, unmitigated evils in the estimation of those whose resources have suffered by their construction, but they must be recognized and admitted to a share of business. There is no possible way of ignoring them, and any proposed remedy to be effective must accept the situation.

There is clearly but one course left. The remedy for all the evils that now affect Southern railroad interests, and which threaten worse in the future, if not promptly arrested, consists simply in an increase and rigid maintenance of rates.

How can rates be maintained when all attempts heretofore have proved fruitless?

The first condition is that every manager of railway and steamship lines shall be fully impressed with the conviction of its absolute necessity, and that in no other conceivable way can the transportation interest be saved from utter ruin.

Next, that the principle of union, for self-protection, should be recognized as applicable to corporations. Without governments and laws anarchy would exist, and no man would be safe from the rapacity of his neighbor. Individual rights and liberties must be surrendered for the good of society, and those who refuse to recognize and obey laws must be coerced into submission. So, also, the right of a corporation to cut the throat of its competitors must be surrendered in return for the exemption from retaliatory injuries which such surrender secures, and the benefit and protection which it confers.

These suggestions are therefore submitted for consideration:

1. That all railroad and steamship companies operating south of the Potomac and Ohio, and east of the Mississippi River, should meet in convention and subscribe to articles of association.

2. That rules shall be adopted for the regulation of competitive business.

3. That penalties be provided and enforced for violations of agreement.

4. That companies refusing to join the association shall not be recognized, and the losses sustained by lines running in opposition to them shall be paid by *pro rata* assessment.

5. That rates and classifications to competitive points shall be established and changed only by convention, and locals when necessary increased to protect through rates.

6. That a commission be appointed constituting a court of appeals, to decide all questions that may arise between members of the association, impose and enforce penalties for violation of agreements, determine proportions when business is pooled, exercise supervision over the clearing-house for settling balances, and establish a bureau of statistics for general information.

The commission is an essential feature—a balance wheel to the machinery. It should be constituted not of lawyers and politicians, but of gentlemen of the highest standing, thoroughly familiar with all the details of transportation on Southern lines, and not connected with or owners of stock or bonds in any of them. They should be liberally paid for their services, and devote their whole time to the interest of the association.

If three gentlemen cannot be found possessed of the requisite qualifications, then, as an alternative suggestion, the commission might be constituted by a combination of compensated and gratuitous services. A salaried President of the Board, and the associate commissioners to consist of one representative from each through line. Questions affecting the general interest to be considered by the whole board, and questions affecting any competitive point only by the commissioners representing lines centering at that point.

Entirely gratuitous service will be ineffective. There must be at least one commissioner liberally paid to devote his whole time and talents to his duties, which will be arduous and responsible.

POOLING BUSINESS AT COMPETITIVE POINTS.

The plan of pooling business at competitive points in proportion determined by agreement is advocated by many Southern railroad managers as the only way to secure harmony and maintain rates.

The plan in theory certainly presents great advantages. It removes all inducements to cut rates, and does away completely with that pest and parasite on the railway system, soliciting agencies. It is clear that a much smaller proportion of business at a given point than a line may claim as its due, carried at fair rates, would yield more net revenue than two or three times the amount secured by competition. As an illustration, the cotton business of a certain competitive point is 60,000 bales. Three lines terminate there; the last opened, to which the others do not concede superior or even equal advantages, claims in a pool 40,000 bales or two-thirds of the whole business, a claim which of course the others refuse to recognize. The established rates have been \$3.50 per bale; under a contest, not more than \$1.50 could be secured. Deducting 1 cent per ton per mile for expenses of movement, the 40,000 bales at \$1.50 would leave net \$20,000; but one-fourth of that amount, or 10,000 at regular rates, would pay net over expenses, \$25,000. There are, unfortunately, some officials willing to sacrifice tens of thousands of dollars for the lines they represent, and inflict hundreds of thousands of dollars damage upon competitors, rather than in a spirit of compromise and concession accept a smaller share of the business than they claim, for reasons satisfactory to them selves, to be entitled to.

Some attempts have been made at pooling for two years, but

the results have not been satisfactory. The difficulty arises, first, from the impossibility of the parties directly interested in agreeing upon proportions; secondly, from the failure of debtor roads to make returns and pay over balances; and thirdly, from the want of confidence in the good faith of other lines, for which experience proves that there is, unfortunately, too much reason.

The proposed commission appears to present a solution of the difficulty, and the only plan by which pooling can be rendered possible, particularly if certain equitable principles be established by which the distribution shall be made, recognizing especially the actual time between shipment and delivery and the frequency of service. A properly constituted commission as a board of referees should inspire confidence; and if a line is allowed less than is claimed as its proportion, it is preferable to accept it at full rates rather than carry the whole without profit.

The commission would also remove the other objections to the pool. It would have control of the clearing-house, prescribe the form of making returns, report balances, and its certificates would form the basis of settlement, which, if not promptly made, could be enforced by penalties.

Under such an organization pooling would be preferable to an agreement to maintain rates, for the latter would render necessary a continuance of soliciting agents, and human ingenuity has never yet devised a plan by which, under active competition, attempts to influence business by outside considerations can be prevented. In such contests, honesty is at a discount and mendacity commands a premium.

Wonderful Railroad Work.

Under this head, which is quite appropriate, the Jersey City Journal of Sept. 3 gives the following account of the trains handled on the New York Division of the Pennsylvania Railroad Aug. 27:

"On last Friday, the largest day's work ever done on the New York Division of the Pennsylvania Railroad was performed. Between the hours of 12 midnight Thursday night and 12 midnight Friday night, trains were run over the division as follows: Regular trains east-bound, 82; west-bound, 81, or 163 in all; extra trains east-bound, 86; west-bound, 97, or 183—a grand total of 346 trains moved during the twenty-four hours. Of these trains 106 regular and 102 extra trains were run through the Bergen Cut, 208 in all. This total shows that a train was run through the cut once every six minutes and a fraction over during the entire twenty-four hours. When it is considered that every one of the extra trains was handled by telegraph, and guided to its journey's end by this means, the wondrous perfection of the system pursued on the road is observable. During those twenty-four hours 3,089 freight cars were moved on the division—1,598 eastward and 1,491 westward. Of these 2,523 ran past Monmouth Junction—1,277 eastward and 1,246 westward. The others were local cars, or were run to stations east of the junction. Besides all these cars, there were 275 peach cars moved east, and to an uninitiated observer it seems impossible that such an enormous network of trains could be run on any road without disaster or accident; but when the uninitiated became initiated into the mysteries of the system of running the trains practiced on the road, astonishment would vanish and admiration grow. During those twenty-four hours, Mr. Barker, the Division Superintendent, was not at the helm, but the great work was done entirely by his assistants. Mr. Gus Gardner, the Assistant Superintendent, Mr. C. Watts, the dispatcher, Mr. Edward Montgomery, the depot master, Mr. J. McKane, the freight-yard master, Mr. W. Ettinger, the division telegraph operator, and Mr. George C. Blake, the night depot master, are the men who so successfully drove the work to a successful finish. All of these gentlemen received their education on the old New Jersey Railroad together with their Superintendent, Mr. George W. Barker. The plan of a line of promotion therefore works well, and has, in this case at least, proved very successful."

Mr. Barker informs us that on Thursday, the 2d inst., he moved on his division 3,117 freight cars in 331 trains, being 38 cars more and 15 trains less than on August 27. This great number of freight trains is made possible only by the high rate of speed at which the trains are run, many of the stock and peach trains on this road making more than 20 miles an hour.

Rapid Transit in New York.

The commission appointed to determine upon a route, plan and rates of fare for a rapid transit road in New York, have made a report to the Mayor of that city. A number of routes instead of a single one was recommended, and the two principal ones coincide closely with those of the Gilbert and Greenwich street companies' routes. The chief routes are as follows, as described in the New York Tribune:

"1. Beginning at the Battery and running through Whitehall, Beaver and Pearl streets and New Bowery to Chatham square; thence through the Bowery and Third avenue to the Harlem River at One Hundred and Twenty-ninth street, with branches through Burling slip across South street to Fulton Ferry, to Thirty-fourth street Ferry and to the Grand Central Depot.

"2. From Chatham square through Division and Allen streets to First avenue, to Twenty-third street, to Second avenue to Harlem River.

"Up Division street from Chatham square to Chrystie street; thence to Second avenue and the Harlem River.

"4. A loop beginning at Chatham square, and running through Chatham street to Tryon row, around the *Staats Zeitung* Building, and through Centre, Park and Mott streets, and private property, to the Bowery.

"5. From Fifty-ninth street down Sixth avenue and through Amity street, South Fifth avenue, West Broadway, Murray and Church streets, and private property, to the Battery.

"6. From the Harlem River through Eighth avenue, Ninety-second street and Ninth avenue to the present terminus of the Greenwich street road, and following the line of that road to the Battery.

"7. From Harlem Bridge along the Harlem River to Kingsbridge.

"Some of the routes chosen are merely alternatives. For instance, the Commissioners say that they do not expect that roads will be built on both Third and Second avenue, but, desiring to leave some liberty of choice in this respect, they resolved to recommend both routes. The same is true of Sixth and Ninth avenues. The report states that the Gilbert Company and the New York Elevated, or Greenwich Street Railroad, have united their interests, and resolved to combine their resources wherever their routes coincide. The consideration of the routes of these roads has occupied the attention of the Commissioners almost exclusively, and they express entire satisfaction with the financial guarantees and good faith of the two companies.

"The plan of construction remains yet to be chosen."

The Report contains the following stipulation regarding the rates of fare and the time for completing the roads:

"TRAINS FOR THE WORKING CLASSES.

"Before making these locations, however, we required from each of the two companies satisfactory bonds, in the sum of \$250,000 for each company, for the completion of their roads within certain periods fixed; and we also required their con-

set, by formal resolutions of their Boards of Directors, among other things to rates of fare specified by us, and to a system of trains to be run between the hours of 5:30 and 7:30 a. m., and 5 o'clock and 7 o'clock p. m., special trains at half rates of fare, in order to accommodate that class of the population which desires to go to and from their daily avocations within those hours. These trains, similar to the trains which are run upon railways in England for the accommodation of laboring people, at low rates of fare during certain hours, and known as "Parliamentary trains," have in the arrangement above referred to, been distinguished from ordinary trains as "Commission trains."

The rates of fare are as follows: On the east side of the city, for any distance between the Battery and Fifty-ninth street, not to exceed 10 cents; for any distance not exceeding five miles, not to exceed 10 cents, and not to exceed two cents additional for every additional mile or fraction of a mile in excess of a mile; but no fare for the entire distance (or any part of it) from and between the Battery and the Harlem River shall exceed 15 cents, and no fare for the entire distance (or any part of it) from and between the Battery and High Bridge shall exceed 17 cents. The fares on "Commission trains" and cars being special trains to be run on the east side of the city from 5:30 a. m. to and until 7:30 a. m., and from 5 p. m. to and until 7 p. m. at half the above rates—are to be five cents, seven cents and eight cents for the above stated distances respectively.

On the west side of the city the fares are to be as follows: From any distance from and between the Battery and Fifty-ninth street, not to exceed 10 cents; for any distance not exceeding five miles, not to exceed 10 cents, and not to exceed two cents additional for every additional mile or fraction of a mile in excess of a mile. And for "commission trains," or cars to be run on the west side of the city from 5:30 a. m. to and until 7:30 a. m., and from 5 p. m. to and until 7 p. m., the fares are to be at one-half the above rates.

TIMES FOR COMPLETING ROAD.

The times for the completion of the railways of the Gilbert Elevated Railway Company are as follows: A section of the line of that company not less than three miles in length and running south from Forty-second street (on either side of the city as may be preferred by the company), is to be completed within ten months from Oct. 1, 1875. The remainder of the railways of that company is to be completed at the rate of not less than five miles in every twelve months after the expiration of the ten months above mentioned.

The New York Elevated Railroad Company are to complete their railways between the Battery and Fifty-ninth street before or by Sept. 1, 1876; from Fifty-ninth street to Harlem River before or by June 1, 1877; and from Ninety-second street and Ninth avenue to High Bridge before or by June 1, 1878.

Cincinnati Southern.—Mr. John M. Goodwin has been appointed inspector of the iron and steel rails to be furnished to this company by the Cleveland Rolling Mill Company—a very large amount.

Connecticut & Passumpsic Rivers.—Mr. H. E. Folsom, for some years General Freight Agent, has been appointed Superintendent, in place of Mr. George A. Merrill.

General Railroad News.

TRAFFIC AND EARNINGS.

Erie Canal Traffic.

Business at Buffalo from the opening up to September is reported as follows:

	1875.	1874.	Decrease.	P. c.
Receipts of tolls....	\$420,017.23	\$726,482.67	\$306,465.44	42.2
Boats cleared.....	3,436	4,548	1,112	24.5

The canal opened May 18 in 1875 and May 5 in 1874.

Flour and Grain Movement.

The following receipts and shipments are reported, flour in barrels and grain in bushels, for the week ending Aug. 28:

Flour:	1875.	1874.	Inc. or Dec.	P. c.
Lake ports' receipts.....	80,237	106,838	26,601	25.0
" " shipments.....	95,338	122,554	27,216	22.2
Atlantic ports' receipts....	148,172	184,361	36,189	19.0

Wheat:	1875.	1874.	Inc. or Dec.	P. c.
Lake ports' receipts.....	1,643,108	2,690,543	1,047,495	38.9
" " shipments.....	1,142,114	1,431,319	289,205	20.2
Atlantic ports' receipts....	569,312	1,452,834	863,529	61.5

Grain of All Kinds:	1875.	1874.	Inc. or Dec.	P. c.
Lake ports' receipts.....	4,420,986	5,013,941	592,054	11.8
" " shipments.....	3,146,685	3,165,646	19,051	0.6
Atlantic ports' receipts....	1,664,312	3,478,344	1,814,034	52.1

There is a decrease here in everything. A late harvest is the chief cause. Deliveries at Northwestern shipping points have been smaller than shipments for some time, and stocks on hand are low. With fine weather for threshing and a continuance of present prices, the movement of the new crops should now become heavy. Of the shipments of grain from lake ports for the above week, 31 1/4 per cent. went by rail in 1875, 19 per cent. in 1874, and 21 1/4 per cent. in 1873.

From Jan. 1 to Aug. 28, nearly eight months, receipts and shipments have been:

Flour:	1875.	1874.	Decrease.	P. c.
Lake ports' receipts....	2,957,101	3,930,514	973,513	24.7
" " shipments.....	3,178,324	3,725,034	547,710	14.7
Atlantic ports' receipts....	5,787,297	6,736,605	949,308	14.1

Wheat:	1875.	1874.	Inc. or Dec.	P. c.
Lake ports' receipts.....	35,742,089	50,885,769	15,143,680	29.8
" " shipments....	31,207,669	39,140,270	7,932,601	22.7
Atlantic ports' receipts....	30,664,227	40,971,073	10,306,846	25.1

Corn:	1875.	1874.	Inc. or Dec.	P. c.
Lake ports' receipts.....	32,649,990	43,991,438	11,341,448	22.3
" " shipments....	26,824,752	33,070,101	6,245,349	19.0
Atlantic ports' receipts....	33,815,872	39,255,256	5,439,396	18.8

Grain of All Kinds:	1875.	1874.	Inc. or Dec.	P. c.
Lake ports' receipts.....	85,453,531	116,563,441	31,090,910	26.7
" " shipments....	68,550,651	106,998,035	18,547,384	21.3
Atlantic ports' receipts....	75,553,943	94,043,765	18,489,822	19.6

The recent comparative activity has lessened the difference between the current and previous years. Though the lake ports receipts are 26 1/2 per cent. less than in 1874, they are 15 per cent. less than in 1873, and only 3 1/2 per cent. less than in 1872. But the Atlantic receipts, while 19 1/2 per cent. less than last year, are nearly 9 per cent. more than in 1873, and 2 per cent. more than in 1872. An increase in direct rail shipments from interior or western points to interior eastern points would reduce all the figures reported, and an increase in direct shipments from interior western points to seaports would tend to decrease the figures of lake ports' receipts and shipments. In fact, for four years lake ports' shipments and Atlantic ports' receipts have been:

	1872.	1873.	1874.	1875.
Lake ports' shipments....	71,610,739	77,371,105	87,098,035	68,550,651
Atlantic ports' receipts....	74,062,659	69,562,498	94,043,765	75,553,943
Per cent. of first to second.	96.7	111.3	92.6	90.7

This shows that the proportion of lake ports' shipments to Atlantic ports' receipts has been less this year than for any of the three years previous.

For the four weeks from Aug. 1 to 28, being the first of the crop year, lake ports' receipts of grain have been:

	1875.	1874.	1873.	1872.
1 bushel.....	19,618,071	17,646,074	20,651,593	17,198,269
On considering the lateness of the harvest, making it impossible to ship to any extent from the new crops, the small receipts of				

August are not to be feared; but the next two months ought to give us a taste of what the year has in store in the way of grain traffic. Prices are good, the crop is abundant, and freights are lower than ever before known.

Baltimore grain receipts for August were as follows:

	1875.	1874.	Inc. or Dec.	P. c.
Flour, barrels.....	125,179	182,697	Dec. 57,518	31.5
Wheat, bushels.....	702,831	1,230,507	Dec. 597,876	42.9
Corn, bushels.....	624,842	464,396	Inc. 160,446	34.5
Other grain.....	114,844	156,960	Dec. 42,106	26.8
Totals.....	2,005,822	2,673,989	Dec. 668,165	25.0

In the totals flour is reduced to wheat.

Buffalo grain receipts for the eight months ending August 31 are reported as follows by the *Commercial Advertiser*:

	1875.	1874.	Inc. or Dec.	P. c.
Flour.	575,867	1,003,701	774,885	32,686,475
By lake.....	868,900	12,008,930	1,246,067	19,096,735
Totals.....	1,434,167	39,012,631	2,019,962	51,733,210

The decrease in flour this year was 29 per cent., and in grain 24.6 per cent. Of the flour 59.8 per cent., and of the grain 30.8 per cent. came by rail. The shipments of grain for the same period were:

	1875.	1874.	Inc. or Dec.	P. c.
By canal, bushels.....	17,956,284	24,144,997	8,333,074	7,461,445
By rail, bushels.....	8,333,074	7,461,445		
Totals.....	26,289,358	31,606,442		

The decrease in flour this year was 16.8 per cent., all of which was in canal shipments, the rail shipments showing an increase over last year, in spite of the very low canal rates. Rail shipments were 31.7 per cent. of the whole this year, and 23.6 per cent. last year.

Chicago grain receipts for the week ending Sept. 4 were:

	1875.	1874.	Inc. or Dec.	P. c.
Receipts.....	2,120,492	1,741,568	384,924	22.1
Shipments.....	2,900,186	2,583,768	325,418	12.6

Lake Rates.

The Buffalo *Commercial Advertiser* says: "It was believed last year that under no possible circumstances would the price of transportation go lower than it was during the greater part of the navigation season of 1874. Very few vessels closed the year with a balance on the right side of the ledger, while a good number of the small-class sail craft ran behind, leaving a large adverse balance with which to commence operations this year. When the accounts were settled in the winter, vessel men said that rather than have such another season they would tie up their property. In that way they could not lose much money in any event."

"But notwithstanding all these protestations nearly all of the lake fleet fitted out sooner or later, and freights are lower than ever, as will be seen from the following statement of the average freight on wheat and corn, from Chicago to Buffalo by the railroads, and from the lake to New York by canal, making the shipments of grain for the month of August, 1875.

"The average rate on wheat by lake last month was over half a cent below that for the corresponding month in 1874, while the average by canal is nearly a cent lower. It will be seen by the exhibit that the ruling prices this year are without a parallel. A freight of 2 1/2 cents makes a very poor showing as compared with 10.3 cents, the average for August, 1866. By canal the average last month was only a trifle more than one-half of that for August, 1866."

"As we have already stated, most of the lake vessels fitted out this season and made a trial, but scores have

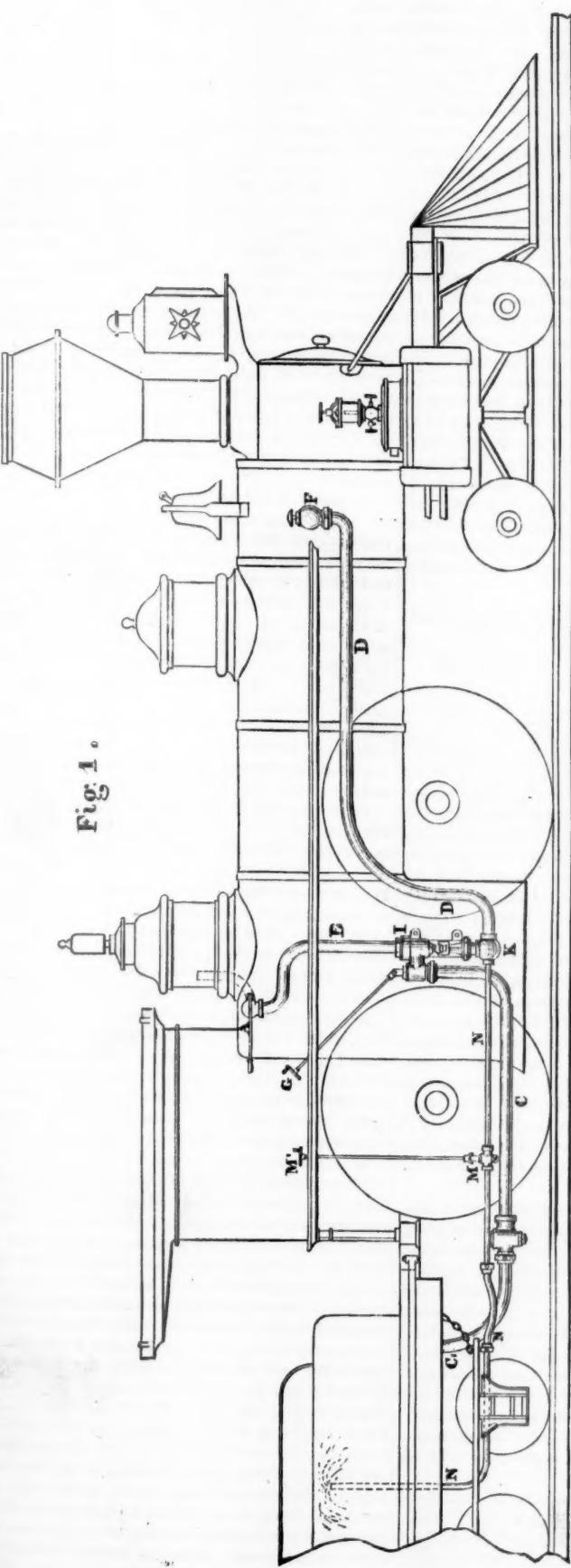


Fig. 1.

Nathan & Dreyfus' independent and adjustable feed water regulator attachment & heater as applied to locomotives.

Fig. 2.

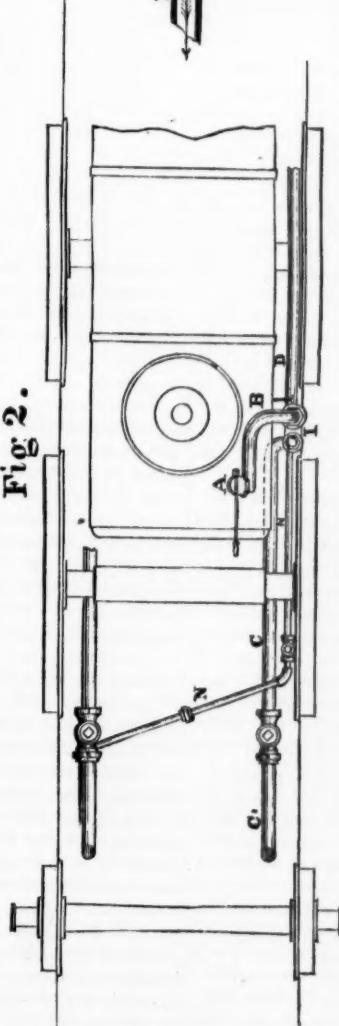


Fig. 2.

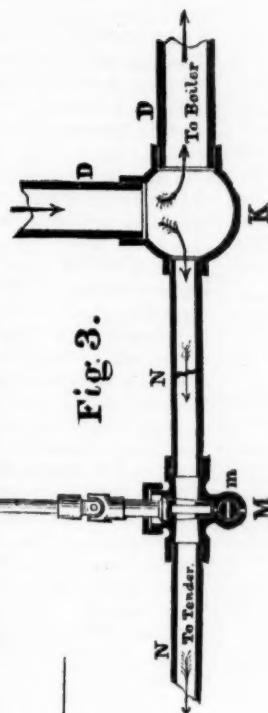


Fig. 3.

FIG. 1 shows an injector I, with the usual adjuncts (viz.: A, starting valve; B, steam pipe; C, water supply pipe from tender; D, water delivery pipe to boiler; F, check valve on boiler; G, Water valve handle) attached to a locomotive.

K is a two-way connection on the water delivery pipe, between the injector and the boiler, through which all the water from the former to the latter must necessarily pass.

M is a regulating cock or valve, and M' is the regulating handle of the same in the cab.

N is a diverting or return pipe attached to the connection K, and leading back to the tender.

N' is the rubber hose and couplings connecting locomotive with tender.

By opening the controlling cock M' in the cab, a portion of the feed-water passing through the delivery pipe from the injector to the boiler is diverted and returned through the pipe N to the tender in a heated condition, enabling the engineer to regulate the water supply according to the demands of the engine, without reference to the injector, and doing at the same time the duty of a heater to the water already in the tender.

FIG. 2 is a plan view of the same, and shows how the extra hose and coupling N may be dispensed with in old locomotives or new ones of a certain class, by carrying the pipe N over under the locomotive to the ordinary feed-pipe on the other side, and using that as a means of return to the tender.

FIG. 3 are sectional views and details of parts K and M, and shows also a small drain cock m on the latter.

When the valve or cock is operated by hand, a graduated scale may be applied thereto, to indicate the extent to which the valve should be opened, according to the varying circumstances.



Published Every Saturday.

CONDUCTED BY

S. WRIGHT DUNNING AND M. N. FORNEY.

CONTENTS.

ILLUSTRATIONS:	PAGE.	GENERAL RAILROAD NEWS:	PAGE.
Feed-Water Regulator Attachment and Heater.....	375	Elections and Appointments.....	378
CONTRIBUTIONS:		Personal.....	379
Angle Plates.....	373	Railroad Law.....	379
EDITORIALS:		The Scrap Heap.....	379
Feed-Water Heaters for Locomotives.....	376	Old and New Roads.....	379
German Railroad Convention.....	376	Annual Reports.....	381
MISCELLANEOUS:		Proposed Combination of Southern Railroads.....	373
The Central Pacific Report.....	377	Wonderful Railroad Work.....	373
Passenger-Car Construction.....	378	Rapid Transit in New York.....	373
Record of New Railroad Construction.....	378	Investigation of Corrosion of Metals.....	382
NEW PUBLICATIONS.....	378	Rapid Renewals of Bridges.....	382
GENERAL RAILROAD NEWS:		Traffic and Earnings.....	374

Editorial Announcements.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to all departments of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

FEED-WATER HEATERS FOR LOCOMOTIVES.

Nearly all master mechanics and engineers have a more or less vague impression that a considerable amount of heat is saved by heating feed-water for locomotives before it enters the boiler. It is, however, doubtful whether many of them have anything more than a vague idea of the amount of economy which can be or is effected by this means. Inventors of feed-water heaters are very apt to make statements of the economy which results from the use of their inventions, said to be confirmed by actual experiments, which, we fear, would not bear very close scrutiny. The fact is, however, that the maximum amount of economy possible to be effected by heating feed-water to a given temperature is easily calculated, and it is also likely certain that there can be no more saving than that which is indicated by theory, but that in all cases it will be less, and usually very much less, than the theoretical economy. In order to make this quite clear to all of our readers, a little elementary explanation may be required, which those who are already familiar with the theory of heat and steam need not read.

In making such calculations we must, in the first place, be careful to distinguish between the *degree* of heat and the *quantity* of heat—a distinction of which we fear many inventors are either ignorant, or which they disregard in their estimates. Thus, if feed-water is heated from a temperature of 40 degrees to say 195, and steam is used at a pressure of 120 lbs. per square inch, the temperature of which is 350 degrees, the inventor is very apt to infer that the *quantity* of heat which was imparted to the water in order to convert it into steam at that pressure is represented by the difference between 40 and 350, or 310, and that if the feed water is heated from 40 to 195 degrees, or has 155 degrees imparted to it, there is thus a saving due to the use of the heater of one-half the heat. It is of course well known by those at all acquainted with the laws of steam or of thermodynamics, that such a notion—because it is usually nothing more—is utterly mistaken, for the reason that a thermometer does not indicate the heat which, to use the old phraseology, becomes *latent* in changing water from a fluid to a gaseous condition. Thus, if water is heated to a temperature of 212 degrees under merely atmospheric pressure, we must then, in order to convert it into steam, keep on adding heat to it, although the steam, after it is generated, will not be hotter than the water, or rather, a thermometer placed in the steam will not indicate any higher temperature, and therefore the heat is said to be *latent*, which term will be as good an explanation as we need for this phenomenon at present. It shows, however, that a thermometer alone does not indicate the quantity of heat in steam. To do this, or rather to measure the quantity of heat, what is called the unit of heat is employed. This unit is the *amount* of heat required to raise one pound of water one degree. To raise the temperature of two pounds of water one degree, or one pound two degrees, would require two units of heat. If now we take any given quantity of steam of a known pressure and find out how much it will increase the temperature of a certain quantity of water, we can learn how much heat there is contained in steam. This has been

done by careful experiment, and the results are embodied in tables which are published in the various treatises on the steam engine.* By these experiments, and from the tables referred to, we learn that it is necessary to communicate 1,178 units of heat to a pound of water in order to convert it from zero to steam of atmospheric pressure. Of course, if the water is already warmed to a temperature above zero, just that much less heat must be communicated to it in order to evaporate it. That is, if one pound of water is warmed to a temperature of say 40 degrees, the total heat required to convert it into steam of atmospheric pressure will be 1,178—40=1,138 units. If heated to 195 degrees, it will be 1,178—195=983 units. The total heat, measured from zero, contained in one pound of steam of 120 lbs. pressure is 1,220.2 units, and therefore in order to convert that quantity of water of 40 degrees temperature to steam of the same pressure would require 1,220.2—40=1,180.2 units of heat. If the water was heated to 195 degrees, it would require only 1,220.2—195=1,025.2 units. Now the difference between 1,180.2 and 1,025.2, or 155 units, represents the theoretical economy of heating the feed water from 40 degrees to 195. In other words it will take 13 per cent. less heat to convert water of 195 degrees into steam of 120 lbs. pressure than will be required to convert the same quantity of water of 40 degrees into steam of the same pressure. Assuming that the average temperature of water used on locomotives is 40 degrees—which is perhaps too low we can easily construct a table showing the theoretical economy due to heating feed water to different temperatures and for different pressures of steam. Such a table is given below, the temperature of the water being assumed at 40 degrees and the steam pressure at 120 lbs. The left-hand column gives the percentage of economy due to heating the water to the temperatures given in the right-hand column. Of course, if the temperature of the water is higher than 40 degrees before it enters the feed-water heater, the saving due to the latter would be still further reduced:

Temperature of water imparted by feed-water heater.	Percentage of economy due to increase of temperature of water above 40 degrees.
40 degrees	... per cent.
60 "	1.69 "
80 "	3.38 "
100 "	5.08 "
120 "	6.77 "
140 "	8.47 "
160 "	10.16 "
180 "	11.86 "
200 "	13.55 "
220 "	15.25 "

It will be seen then that even if the temperature of the water was as low as 40 degrees before it entered the heater and it was heated to 220 degrees, or above the boiling point, the theoretical saving would only be 15½ per cent. Now the above is the maximum theoretical effect that can be produced by a feed-water heater. In practice there are numerous sources of loss, such as radiation, leakage, etc., which reduce this very materially. But besides the waste, as it may be called, of a heater, there are other sources of loss which must be taken into consideration in estimating its practical value on a locomotive. There is its first cost, which will be from \$250 to \$500—say \$375. The interest on this at 7 per cent. will be \$26.25 per year. Besides this, no prudent engineer would charge less than 10 or 20 per cent. for the annual deterioration of such an apparatus, say 15 per cent., which will be \$56.25. The cost of repairs must also be added, which, at say \$25 per year, would make the total annual charges \$107.50.

Those who undertake to make improvements in locomotives, are very apt to lose sight of the fact that anything which diminishes the maximum capacity of such engines for pulling cars diminishes their efficiency in the same proportion, and increases the cost of the service which they perform. In order to move a train over a road, it is necessary not only to consume fuel, but the labor of a locomotive runner and fireman, usually three brakemen and a conductor are needed. Besides these expenses there is the cost of repairs, oil, waste, cleaning and interest on the cost of locomotives, and the annual charge for deterioration, all of which form a part of the cost of moving trains. Taking these items per train mile as follows, we will see that they will amount to:

Oil and waste per train mile.....	\$0.0040
Cleaning " "	0.0030
Repairs " "	0.0700
Wages of engineer and fireman per train mile.....	0.0300
" three brakemen " "	0.0325
" conductor " "	0.0250
Interest on cost of engine at 7 per cent. per train mile.....	0.0233
Charges for deterioration at 10 " "	0.0333

Now if the feed water is heated by the exhaust steam, the force of the blast in the chimney must be diminished in proportion to the amount of steam used in the heater. This will reduce the steam-generating capacity of the boiler. Now on all roads there is one or more ruling grades which determine the load that an engine can draw, and this is in most cases governed by the steam-generating capacity of the boiler. In other words, locomotives fail to pull the trains because the boiler cannot generate sufficient steam. A feed-water heater could, of course, be so constructed that the exhaust steam could all be utilized for the blast in case of necessity, or a portion turned into the heater when not needed for the blast; but then the advantage of the heater would be lost just at the time when the most water is pumped into the boiler. On the other hand, it might be said that if the feed water is heated before it enters the boiler, there would be less difficulty in making steam, and therefore a less violent blast is needed than will be required if cold water is pumped into the boiler. The relative efficiency of exhaust steam, if used to heat feed water or if used to increase the force of the blast, is a question of fact, which probably only careful experiments can determine. It must be borne in mind, though, that the water which is pumped into the boiler is, with the exception of some waste, exactly equal to that which escapes in the form of exhaust steam. When, therefore, an engine is working hard and a great deal of steam is exhausted an equal amount of water must be fed into the boiler. If, therefore, one-fourth of the steam must be used for heating the feed water at one time, an equal proportion must be used at all times in order to heat the water to the same temperature. The question which a master mechanic must ask himself is, then, whether by using any given proportion of the exhaust steam which may be needed for heating the feed-water, the efficiency—that is the maximum steam-producing capacity of the boiler—will be increased or diminished? If it is diminished, then the other train expenses given will be increased per car hauled. Thus if an engine can haul thirty cars without a feed-water heater and can haul only twenty-nine with one, then the train expenses per car hauled will be increased one-thirtieth. Thus if an engine ran 30,000 miles per year, and the cost of fuel was six cents per mile, the total cost of fuel would be \$1,800. If by heating the feed-water from 40 degrees to 200 we save 13.55 per cent., the total saving will be \$243.90. Deducting from this the cost of repairs, etc., we have \$243.90—\$107.50=\$136.40, which is the amount still left to the credit of the heater, or the amount of saving effected per year. But as the other train expenses are about \$0.2741 per mile, or say 25 cents, the total cost of these per year will be \$7,500. If now, the feed-water heater diminishes the capacity of the engine a single car, or one-thirtieth, there will be just so much less useful work done for the money, which is equivalent to increasing the expenses in the same proportion, which in this case would amount to \$250, which is more than the saving effected.

There is also the objection to all appliances like heaters that they increase the complication of the engine, and in the same degree the liability of getting out of order and requiring to be laid up for repairs. This is ordinarily much more expensive than is supposed, and makes it necessary to have a larger equipment to do a given amount of business. During the busiest seasons of the year a railroad needs machinery which will do the largest possible amount of business. It often happens that if business is not done in a given time it cannot be done at all, and therefore the larger the amount of service which can be performed by machinery the greater will be the useful work that it will do; or, in other words, the more money it will earn. It is idle to say that a feed-water heater does not increase the liability of a locomotive to get out of order. Every additional piece added to a machine increases this danger, it may be in a very small degree, but it is increased nevertheless.

If now we add to the additional expense due to the liability of the engine getting out of order the loss of efficiency due to waste, etc., it is evident that a feed-water heater instead of being economical may be the reverse. That the latter will be the case on any road on which the locomotives are worked up to their full power is absolutely certain *in case the heater diminishes the maximum capacity of the engine*, or, in other words, renders it incapable of pulling as many cars up the steepest grades, or over the hardest part of the road, as it could without the heater. Adding to this the fact that a heater increases the liability of an engine getting out of order, and also that in practice much less than the theoretical advantage is gained by their use, we think it may safely be assumed, that if the capacity of an engine is diminished by the use of a feed-water heater, it is not profitable to use them on locomotives. In any event we may be entirely certain that it is preposterous to claim a saving of 30 per cent., or even more, of fuel, as some inventors do, from the use of such appliances.

GERMAN RAILROAD CONVENTION.

On the 2d of August of this year the German Railroad Union held a general convention in Bremen, in advance of which was published the order of exercises and an account of the principal subjects proposed for discussion or subjects for adoption, from which we take the following:

The order of exercises was as follows:

- I. Presentation of report of management of the Executive Directory.
- II. Introduction of a single and uniform unit of weight in the tariffs for package freight and car-loads.

* See Catechism of the Locomotive, Appendix I.

III. a. Modifications of some of the rules of the Working Regulations.
b. Introduction of a new form of way-bill.
IV. Consideration of the plan of a new agreement with regard to the Working Regulations.

V. Modification of §§ 3 and 11 (now 10) of the constitution of the Union.

VI. Consideration of the scheme for new rules concerning Union tickets (free passes).

VII. Designation of the weight and capacity of cars according to the metrical system.

VIII. Motion for the introduction of Menzl's coupling apparatus for freight cars.

IX. Election of the standing committees of the Union, (in accordance with the resolution of the Pesth general convention).

X. Statement of account of the Executive Directory with regard to the management of the treasury of the Union.

XI. Election of a new Executive Directory of the Union.

XII. Choice of place for holding the next general convention of the Union.

The report of the Executive Directory is also published in advance of the meeting, it begins by giving changes in the managements of roads belonging to the Union; then the absorption of a company's road in Bavaria by the State, the admission of new members, and applications for membership to be considered by the convention; and then gives a list of all the managements which are members of the Union, with the headquarters of each, its mileage in operation, and its number of votes in the Union. This long list shows 56 managements of the German Empire in the Union, with 16,865 miles of railroad and 179 votes; 38 managements with 10,745 miles of road and 119 votes in Austria-Hungary, and 8 managements with 1,688 miles of road and 22 votes in other countries, the totals being 102 managements, with 29,296 miles of road and 320 votes in the Union. Thus the average mileage per management is 287. Among the members are the managements of the State railroads of the Grand Duchy of Baden, of the Kingdom of Bavaria, of several Prussian State railroads, and of the Saxon State railroads. The length of line under one management varies from 1,438 miles (the Austrian Southern) to 3½ miles.

This Union, as we have said before is a society of managements and not of officers; that is, it is equivalent to what would be in this country an association of railroad companies; but we cannot designate it as such because a large number of the railroads represented in the German Railroad Union are worked by the State and not by companies. The power that works the railroad, whatever it may be, is the member of the Union, and it sends such representatives as it may choose to deliberate, make investigations and vote in the Union.

As to the kind of officers entrusted with this important task, a list of the delegates shows such as these: Director, Government Councillor, Government Assessor, Privy Councillor, Secretary of the Directory, Chief Freight Inspector, Solicitor, Chief Inspector, General Agent, Director of Operation, Traffic Director, Chief Book-keeper, Superintendent of Operation, Chief Master of Machinery, etc. Probably half were directors, some named as "President of the Directory," while the representations of State railroads were named by the official titles, chiefly Councillors—of Administration, of Construction, of Finance, etc.—with which German States seem to abound; and some of the representatives of private railroads are designated only by the title with which their Government has honored them. Some of the managements were represented by one, and some by several persons, and this without much regard to the number of votes cast by each; though there were not nearly so many representatives as votes in the convention. Evidently many were sent who had previously been appointed to report on some particular question; for instance, we see that Councillor of Direction Von der Planitz, of the Saxon State Railroads, rendered a report of the granting of "Union tickets," which are equivalent to passes over the railroads of the Union; Ritter von Stummer, of the Emperor Ferdinand Northern Railroad of Austria (and, by the way, Editor of *Stummer's Ingenieur*) reported on the designation of car weight and carrying capacity, etc.

But the Union does not designate individuals as committee-men to report, it selects managements, and these delegate the duties to their officers. Indeed, it is thus with the officers of the Union. The report of proceedings says that when the election for the chief executive of the Union was held, the present Executive Directory (Berlin & Anhalt) was chosen unanimously; and the "Committee on Freight Traffic" chosen consisted of the Berg & Mark, the Eastern Railroad, the Royal Hanover State Railroad, the Bavarian State Railroad, the Baden Railroads, the Royal Saxon, and other railroads—no person being mentioned. The result of this, doubtless, is that the reports represent the actual desires of the controlling powers, while if individuals were appointed their recommendations might be unwelcome to the very roads which they serve.

An examination of the proceedings, which we find reported quite briefly so far as debates are concerned, shows some of the work done to have been as follows:

The recommendation of a committee to reckon car-load and package freight uniformly by hundreds of kilograms, rounding off numbers to two decimal places, was unanimously adopted. Modifications of the Working Regulations were adopted, one requiring shippers to mark in some enduring way the name of the station to which the freight is destined on all package freight, and declaring that freight not or imperfectly marked will be refused; if shippers wish the marking done by the railroad employees, however, it will be done on payment of a sum to be named in the tariffs; other modifications of these regulations would not be intelligible without quoting largely from the old regulations.

There was a long discussion on a new form of way bill, a subject which has caused a great deal of trouble in Germany, apparently, which resulted in a vote on a method of deciding the question afterwards.

A committee report recommending a revised system of Working Regulations for the Union was unanimously adopted.

An amendment of the constitution providing that an Executive Directory should be chosen every three years to conduct the business of the Union, and that no management may refuse to accept the position, unless it has been the last to occupy it, and defining the duties of this executive, was adopted. Also amendments defining the dues of members were adopted, by which it appears that each road must pay about \$50 without regard to its length, and in addition one mark per kilometre worked, which is at the rate of 42 cents gold per mile.

The Committee on Union Tickets reported that it aimed at a method which, while preserving the objects of the arrangement for distributing such tickets, would prove an effective limitation of the issue. Such a limitation, it was thought, would be secured by making the number of tickets issued to each management dependent chiefly on the length of road worked by it. It recommended that two tickets be issued to each management without regard to length of road, one for each 50 kilometres (31 miles) of road up to 200 kilometres, and one for every 100 kilometres above 200 kilometres. This recommendation was amended so as to provide that for members of the directory and chief officers of the management only one ticket shall be given for roads less than 100 kilometres long, and two for longer roads. Regulations as to the use of these tickets were also adopted.

A committee reported in favor of designating capacity and weight of cars in kilograms (about 2½ pounds). A Hungarian railroad officer objected that this is too small a mile, especially in railroad statistics, and proposed tons (of a thousand kilograms) instead, but the committee's report was adopted.

A report on the finances of the Union showed the receipts from the date of the Pesth Convention (Sept. 20, 1874) to that of the convention then in session (August 2, 1875), to have been a little less than \$33,674 gold, and the expenses about \$1,100 more than the receipts.

The next convention is to be held in Munich.

The standing committees appointed at this convention were: On Freight Traffic; On Passenger Traffic; On the Union Car Regulations; On Technical Matters and Operations; On the Constitution of the Union; On the Journal of the Union; On Union Tickets. These standing committees are chosen for three years.

Perhaps no feature of the Bremen Convention recalls our American associations more than the excursions which were given the delegates. There was an "extra train" from Bremen to Wilhelmshafen provided by the Grand Duchy of Oldenburg Railroad Company, which had placed at the disposal of the delegates a number of "elegant drawing-room cars" (elegante Saloonwagen), and besides one of Mann's (Mann is an American, who went to Europe to conquer an empire like that over which Pullman reigns here drawing-room and sleeping cars were put in the train, "that the participants in the journey might have evidence of its excellent construction by their own experience." At Wilhelmshafen they were conducted over the wharves and dry docks, inspected a great ironclad under construction there, an old man-of-war, the boiler shops, the crane which lifts 165,000 lbs., and then returned to the station and had lunch, at which there were speeches of thanks, etc. Another excursion was made to Bremerhaven, where, after inspecting various objects of interest, a dinner was given to the delegates by the North German Lloyds, accompanied by toasts and speeches, which was followed by an evening excursion on one of the Lloyd steamers.

In considering the nature and amount of work done by the convention, two things must be borne in mind: first, that in describing the proceedings we have included in a sentence matters which embraced reports of some length in amendment of elaborate regulations previously in force, mentioned, perhaps, only by title and section; and second, that this Association is not beginning its work, with all the most important problems waiting for it to investigate and solve, but that it has been in full working order a

great many years, has prepared and revised and re-revised a whole system of agreements, contracts, regulations, etc., and may be considered to have got through with the most difficult and fundamental part of its work. So far was this the case some years ago, that it was then proposed, and we believe for some time agreed, to hold general conventions but once in three years instead of every year. Moreover, we should perhaps add a third explanation, which is, that besides the general convention, which is the Legislature of the Union, there is also a technical convention, held periodically, in which the officers in charge of machinery and engineering structures and of the working of the roads meet and discuss those technical matters which absorb the attention of our Master Mechanics' and Master Car-Builders' Associations, and indeed those other questions which might be discussed by associations of engineers, road masters, superintendents of transportation, train dispatchers, etc. About a year and a half ago we published a list of the questions to be discussed at this technical convention, through which a very large part of the work of the Union is done. It, for instance, prepared the "Technical Regulations for the Construction and Equipment of the Railroads in the German Railroad Union," a translation of which we published two years ago.

As regards the value of the work done by the German Railroad Union, there seems to be no doubt in Germany, where the roads not belonging to it are very few indeed. It aims, apparently, only at such a degree of uniformity either in construction, working, or modes of transacting business, as will make the interchange of traffic easy, simple and inexpensive. And it is not inconsistent with the formation of special connections and regulations between some of its members, which indeed are very common, three or four or more railroads in one district with great interchange of traffic or many common points often forming a little organization called a *Verband*, partly, apparently, to regulate rates and prevent undue interference with each other. Most members of these systems are also members of the Union.

The Central Pacific Report

The analysis of the *Central Pacific* presented elsewhere will attract general attention. In these days of dullness in traffic and decrease of earnings the two Pacific roads have reported a constantly growing income. They have made a class by themselves, and that for two reasons, the first being that the roads are very little troubled by competition, get all the traffic there is, and maintain tariffs at profitable rates; and a second, affecting especially the Central Pacific, that the financial disasters of 1873 hardly reached the Pacific coast, which has, with increasing production, enjoyed a really prosperous season while on this coast business was languishing. The traffic of the Central Pacific, for instance, has been for the three years as follows:

	1872.	1873.	1874.
Passenger mileage.....	100,140,414	120,874,301	134,307,087
Tonnage mileage.....	235,637,423	248,793,045	260,395,918

Here is a steady growth, showing no signs of "panic;" and as the road has nearly all the railroad traffic of California, it may be assumed to represent fairly the growth of business of that flourishing young State. Counting a ton-mile and a passenger-mile as equivalent (and this company's average receipt for one is about the same as that for the other), we have the traffic of 1873 greater by 8 per cent. than that of 1872, and that of 1874 greater by 12 per cent. than that of 1873, the increase in the two years being 21 per cent. This is the growth of the traffic, not of the earnings, and it shows very clearly that the prosperity of the company has rested on a sound basis.

Notwithstanding the exceptional position of the company, with little or no competition for most of its traffic, it has nevertheless reduced its average rate—probably was compelled to do so by circumstances, as most other railroads sometimes are in addition to the reductions compelled by competition. But the position of the Central Pacific is such that it has not been compelled to do any large part of its business at unprofitable rates, as so many Eastern roads have had to do since (and before) the fall of 1873, and the reductions in its average rates have been comparatively small. For three years these rates have been:

	1872.	1873.	1874.
Per ton per mile, etc.....	3.600	3.675	3.267
Per passenger per mile, etc.....	3.330	3.650	3.520

Here we see a trifling increase from 1872 to 1873 in the average freight rate, but within the two years there has been a reduction in both passengers and freight, amounting to 11 per cent. on freight and 8 per cent. on passengers. Doubtless it would not take many years at this rate of progress to make the rates very low, but the reduction is much less than many roads on this coast have had to accept, and, moreover, the company can regulate them pretty much at will, so far as other carriers are concerned, having, of course, to adjust itself to the conditions of trade as other roads do: that is, if wheat should be worth 50 cents in San Francisco, as formerly it was worth but that amount in Chicago, the Central Pacific would probably be compelled to carry wheat to San Francisco Bay at cost, or thereabouts, or else suffer a great stagnation in all traffic on its lines through the wheat country. But so far as competition for local and most through traffic is concerned, it cannot be made to suffer much.

The profits of the company, indeed, have not fallen off as much as the rates, for the rate of expenses has been decreased somewhat, as was to be expected with the small change in rates, the increased traffic, and the lower prices of materials

and labor. Thus the percentages of expenses to earnings have been :

Percentage of expenses.....	1872.	1873.	1874.
	43.40	40.47	40.25

The result has been that the expenses per unit of traffic have been :

Per passenger per mile, cents.....	1872.	1873.	1874.
	1.662	1.483	1.311

Per ton per mile, cents.....

Per ton per mile.....	1872.	1873.	1874.
	2.168	2.167	2.209

Per ton mile.....

Per ton mile.....	1872.	1873.	1874.
	2.072	2.202	1.840

This shows a decrease in the expense per unit of traffic of 21 per cent. in passenger and 11 per cent. in freight. This leaves at the profit per unit :

1872.	1873.	1874.	
Per passenger mile.....	2.168	2.167	2.209

Per ton mile.....

1872.	1873.	1874.	
	2.072	2.202	1.840

Thus there has been an increase in the profit per passenger-mile of 2 per cent., and the decrease in the profit per ton-mile has been 11 per cent.

The very small percentage of expenses to earnings on this road has excited surprise, but the returns show that in chiefly due to the good rates maintained. Nevertheless, the cost per unit of traffic, considering the very thin traffic of most of the mileage worked, and the heavy grades of the Main Line, is certainly very low, and indicates an efficient working management.

The prospect for the current year, if drawn from the reports of earnings and expenses down to this time, is certainly brilliant. The growth in earnings has been faster than ever before, and the excess of net earnings over last year for the first half of the year is one and a half times as great as the increase of net earnings from 1873 to 1874. That this rate of increase will continue is not probable, for there is a much lighter wheat crop to move this year, and perhaps the great failure of the Bank of California may have a bad effect on enterprise for a time. But this gain already made is sufficient to guarantee a prosperous year for the railroad company, which will be able to stand greater misfortunes than any now threatening it, without suffering.

Passenger Car Construction.

The following is an extract from a letter just received from a correspondent: "I read an article in the *Gazette* of September 4 on Passenger Car Construction, that in some respects is first rate, but think the writer must have forgotten that in this day of improved machinery we can work a circle or curve for windows, seats etc. cheaper than we can make right angles, and in some cases for half the money. I do not say this is so in all cases, but I do not believe that there is an increase \$400, or \$500, in cost between square and round-topped windows. I think you would find it difficult to get back now to the old, low, square-top windows."

The force of the last remark of our correspondent is in the word "low." We do not see why square-topped windows might not be made without being "low," and with a style of ornament appropriate to that form. What we contend for is, that an arched window is not an appropriate form for a structure made of wood, because it is not so strong as a square one, costs more and will not stand time and exposure as well. No argument is needed to show that a piece of wood with the grain running crosswise is not as strong as one in which it runs lengthwise. If the window tops are curved, the grain must run crosswise in some places.

We would be glad to receive from some of our correspondents information regarding the relative cost of round and square windows.

Record of New Railroad Construction.

This number of the *Railroad Gazette* has information of the laying of track on new railroads as follows:

Utica & Black River.—The *Morristown Extension* has been extended from Redwood, N. Y., northward 20 miles to Brier Hill.

Perkiomen.—Extended from Pennsburg, Pa., northward 13 miles to Emmaus, completing the road.

Ohio & Mississippi.—On the *Springfield Division* a line has been completed to Peoria, Ill., eastward to Tower Hill, 7 miles, to be used instead of a leased track.

Atchison, Topeka & Santa Fe.—Extended westward 24½ miles to West Las Animas, Col.

This is a total of 64½ miles of new railroad, making 678 miles completed in the United States in 1875, against 984 miles reported for the same period in 1874, 2,408 in 1873, and 4,264 in 1872.

NEW PUBLICATIONS.

A General Classification of Railway Realities Rights, and Plant, designed to facilitate the work of taking an accurate inventory of such property: by George T. Balch, C. E., late Brevet Lieutenant-Colonel Ordnance Department, U. S. A.

Who knows what any railroad company owns? In most cases we are doubtless safe in saying, No one. Hardly is a railroad opened for traffic when it begins to accumulate property of almost all imaginable kinds, intended to facilitate in some way its work as a carrier; and, unless a record is kept of all such acquisitions, and, what is more, of the changes in their condition by depreciation and repairs, down to its final destruction, who can say what the corporation owns, where it is, or how much it is worth? It is reasonable to suppose that each company will know what lands it has: the tax-gatherer usually keeps one in mind of that; and what tracks and sidings, and what rolling stock it owns. But it is not so certain that at the headquarters of any company any person knows or can ascertain how many wheel-barrows, steam engines, horses, decks, stoves, maps, scales or crowbars it has. Yet there is some employee of the company in charge of every piece of property, from a great machine shop (or an opera house) to a quire of paper, who is said to be "responsible" for it: but how shall we hold a man responsible for property of which we have no knowledge?

Of late years a great many railroad properties have been

placed by the courts in the hands of receivers, who are required to return to the courts appointing them an inventory of the property thus put into their charge, and for which they become responsible and give bonds. Now to present an inventory worthy of the name is a task that, as records are usually kept—or not kept—cannot be performed without a systematic classification of the property that will call to mind to every employe who is called upon to report what he is responsible for, every species of property in his charge: for some things will be sure to escape the attention of the most exact man without such a reminder, if he has a considerable variety of property to account for.

The work under consideration was prepared by Col. Balch for the purpose of making an inventory of the property of the Erie Railway Company, which is probably one of the most complex in the world, it having offices with company effects in London and San Francisco and scores of other places off the company's lines, and a wonderful variety of accessories, acquired during its long and checkered career,—wharves, ferries, water craft, gas works, an opera house, costumes, etc. The variety of its property, the remote period at which much of it was acquired, and the vicissitudes through which the company has passed combine to make it more than usually difficult to inventory this company's property, and so make a system of classification especially necessary; though some classification is necessary for an effective inventory on any railroad; for, as we have said, officers who have not been accustomed to make regular returns of the property in their charge cannot be expected to call it all to mind at a moment's notice. We have heard that when one company ordered a return of property for the purpose of an inventory, no one made any return of accounts receivable, or of patent right royalties (for which the company had paid scores of thousands of dollars), or of heating apparatus of any kind; and even after the general officers had considered the matter long and carefully, it had not occurred to anyone to take account of cash in transit, though a great railroad company might well have a hundred thousand dollars every day on the way from agents to the Treasurer—money not in the hands of any employe of the company at the moment the inventory is taken.

The author in his preface says:

"The completeness of an inventory depends upon two essential points: First, every article, or piece of property, great or small, must be entered on the record. Second, a correct description of each individual article must be given, as also its present location and *actual present condition for use*. This information is indispensable to a proper estimate of its value.

"What is wanted, then, is a plan of procedure, based upon sound business principles, which will enable us to obtain the results indicated with the least expenditure of money, time and temper. The first step towards such a plan is general classification of the property, which, while conforming in its outlines to the administrative organization of the railway in question, will enable us to group the same kinds of property together, whether situated at the same station, on the same division, or in the same State; and clearly define the responsibility of the officers to whose care it is ordinarily entrusted.

"Regarding the labor of enumerating the property, the plan proposed is as follows: The blank forms having been prepared as already described, each having printed upon it such special instructions as are pertinent to the particular work to which the blank relates, they are to be sent to the proper officers, accompanied by such general instructions as will insure promptness of action and uniformity of results on the whole line of the road.

"These blanks and the instructions should be sent out at least *twenty days prior to the date fixed for taking the inventory*, and a *specified hour* should be named, on that date, at which the enumeration officially takes effect. The work of inventoring the real estate, heavy machinery, water craft, and all property the location of which from its nature is determinate, can be immediately entered upon, so that the bulk of the labor will be accomplished when the day arrives. Everything being ready, at the appointed hour the *entire current business of the road will cease*, and every officer and employe, from the President to the brakeman, whose sphere of duty has previously been strictly defined by his superior, proceeds to do what little work there remains to be executed within his prescribed sphere. Trains in motion stop a specified number of minutes, to enable the number and conditions of the cars and the quantity of fuel, oil and other current supplies to be ascertained, while the workman at his bench and the track hands on the road take account of supplies in their possession for the current daily work of repair or construction. If proper forethought is exercised and the work systematically subdivided, in two hours after the appointed time the original notes and records of the enumeration, duly checked by supervising officers, can be completed. The work of compiling the records for the central office, which should have been in progress from the commencement of the enumeration, can be completed at once, and within a week the returns for the whole road should be in the hands of the chief executive officer."

Dividing the property primarily into real estate and personal property, the real estate is given under the three heads of Main Line of railway and branches, as chartered; leased lines and branches; and all other property; then under each of these, property owned and property leased. Property owned is further subdivided into two sections; Section I, into eight divisions; the divisions into subdivisions, one having eleven such subdivisions, and some of the subdivisions are further subdivided.

In an appendix is given a detailed list of the different kinds of detached buildings on the Erie Railway, taken from an inventory made last spring, which answers to Division VIII. of Section I, Class I., Part first, of the classification. It names nearly two hundred kinds of structures. This is making minute distinctions, it is true; but this is just what is wanted in an inventory of property intended to serve as a description and a guide to the value of the structures.

A fundamental requirement of the plan of taking the inventory is that all property should be described, as to quantity, character, location and condition, by the person who uses it or has it in charge, who may be assumed to have the best knowledge of it; but that it should not be valued by these persons, but by experts, such as the Purchasing Agent, who knows the

market value of property, which is not often the case with those who use it.

An appendix giving a form for an inventory of trackmen's tools illustrates this. Here the left-hand margin has the names of the different kinds of tools printed, with space for number and in some cases of weight. This is followed by seven columns for "condition for use," five of which, under the general head of "serviceable," are: "New or as good as new," "One quarter worn," "One half worn," "Three quarters worn," and "Total serviceable;" the other two, under "unserviceable," are "reparable" and "irreparable." Now the employe responsible for the property at the time is to fill this blank. He returns so many crowbars of such and such weights, and the number of each as good as new, one-quarter, one-half and three-quarters worn, but still serviceable, the number unserviceable which can be repaired, and the number beyond repair. But under the head of "value," at the right of these columns for condition for use are two other columns which the man in charge of the property does not fill. One of them is "cost new," and the other "estimated present value." These, the Purchasing Agent, or other expert in current prices can readily fill, from the description given in the adjoining columns. Those columns give him the information on which he, better than any one else—certainly much better than the man who uses, but never buys or sells the tools—can form a judgment of the values.

This classification, it seems to us, must be a great aid in taking an inventory of the property of any railroad company for any purpose; but if inventories were only taken for receivers there is now a large class to be benefited by Colonel Balch's labors. And the authorship of this work inclines us to say that this is a striking example of the lessons in the art of administration that railroads may receive from armies. Every army officer is compelled to account for periodically all the property in his possession, and every army organization aims to keep track of all the property it has or ever had. This is simply indispensable in so great an organization; but our railroad companies have usually developed from small beginnings, when perhaps a few officials could keep the whole property pretty well under their eyes and dispense with the complex administration of armies and governments; and when the corporations have grown they have too often preserved a horror of "red tape" and a faith in a "simple" administration which results in uncertainty, irresponsibility and enormous waste. In the planning of systems of organization and methods of administration suitable to the present development of railroad corporations, not only may we study army administration to advantage, but may expect efficient help from men who have been army officers; though of course such help must come from those who know what the forms and the methods by which they have been compelled to work are for, not from those who are simply expert in using them. There is an art of administration, admirably developed in many armies and navies and in some civil service systems; but it requires a mind which appreciates the basis of this art, the science of administration, to form the rules for such an art adapted for any new business. Doubtless much has been done since railroads were introduced; but doubtless, too, much remains to be done, and any step taken in advance, and especially any recorded step, deserves a hearty welcome.

General Railroad News.

ELECTIONS AND APPOINTMENTS.

Hannibal & St. Joseph.—Mr. W. J. Hilton has been appointed Acting Purchasing and Supply Agent of this company. All requisitions for supplies of all kinds must be made upon and addressed to him.

Connecticut Railroad Commission.—At a meeting held in Hartford, September 1, the Board of Railroad Commissioners organized for the ensuing year by the election of Mr. George W. Arnold, of Haddam, as Chairman. Mr. M. A. Osborne, of New Haven, entered upon his duties as the successor of Andrew Northrop, of Brookfield.

Atchison, Topeka & Santa Fe.—Mr. R. E. Farrington has been appointed Superintendent of Telegraph, in place of James W. Stacey, resigned.

St. Louis, Keosauqua & St. Paul.—Mr. E. P. Howard, of Keosauqua, Ia., has been appointed Receiver by the Iowa Circuit Court.

Western Union Telegraph.—Mr. Abijah R. Brewer has been chosen Secretary of the company. Mr. John C. Hinckman has been appointed General Superintendent of the Eastern Division in place of George H. Mumford, deceased.

West Wisconsin.—Mr. C. D. W. Young has been appointed Auditor in place of Wm. James, resigned.

Pennsylvania.—Mr. H. H. Carter has been appointed Superintendent of the Frederick Division, in place of E. L. Du Barry, resigned.

Intercolonial.—The officers of this road are now as follows: C. J. Brydges, General Superintendent Government Railway; R. Luttrell, Assistant Superintendent; A. McNab, Engineer; H. A. Whitney, Mechanical Superintendent; Thomas Foot, Accountant; J. J. Wallace, Auditor and General Passenger Agent; D. Pottinger, General Storekeeper. General offices, Monocion, N. B.

Savannah & Memphis.—At the recent annual meeting the following officers were chosen: President, P. P. Dickinson; Vice-President, W. L. Salisbury; Chief Engineer and General Superintendent, Wm. S. Greene; Secretary and Treasurer, R. H. Nesbitt. Mr. Dickinson has his office at No. 72 Broadway, New York; the other officers are at Opelika, Ala.

Port Royal.—Mr. Charles R. Abbott, Augusta, Ga., is Auditor, and reports of ticket sales should be sent to him.

Atlantic & North Carolina.—Mr. P. H. Adams has been appointed General Passenger and Freight Agent, succeeding J. A. Suydam, Jr., General Ticket Agent, and Joseph Nelson, General Freight Agent. His office is in Goldsboro, N. C.

New York & New England.—The full list of officers is as follows: Wm. T. Hart, President; George B. Phippen, Treasurer; S. C. Hathaway, Secretary; George W. Little, Cashier; George L. Perkins, Treasurer Norwich & Worcester Division; E. T. Clapp, Secretary Norwich & Worcester Division; Charles P. Clark, General Manager; A. C. Kendall, General Ticket Agent; G. H. Williams, General Freight Agent; H. M. Britton, Super-

intendent Eastern Division; P. S. M. Andrews, Superintendent Norwich & Worcester Division; E. H. Tucker, Superintendent Woonsocket Division; W. W. McKim, Purchasing Agent.

West Jersey.—Mr. Wm. Taylor has been appointed Secretary and Treasurer in place of George J. Robbins, deceased. His office will be in Philadelphia.

PERSONAL.

—Mr. Samuel C. Hough, for several years General Passenger Agent of the Pittsburgh, Washington & Baltimore Railroad, has tendered his resignation.

—Mr. C. O. Whitney, Assistant Superintendent of the Alabama & Chattanooga Railroad, died at Rhea's Springs, Ala., August 27.

—The Democratic State Committee has nominated Mr. W. I. Broinwelt as a candidate for the office of Railroad Commissioner of Minnesota, in place of Mr. J. W. Sencerbox, who was declared ineligible and withdrawn.

—Dr. W. J. Hawkins, who has been President of the Raleigh & Gaston Railroad Company since 1857, with the exception of two years, and President of the Raleigh & Augusta Air Line Company since its formation, has resigned both positions, to take effect October 1.

—Gen. Gershom Mott, formerly for several years paymaster of the Camden & Amboy Railroad, has been appointed State Treasurer of New Jersey *ad interim*.

—Mr. T. J. Gorman has resigned his position as Master Mechanic of the Missouri, Kansas & Texas Railway, and is, for the present, residing at his former home in Springfield, Ill.

RAILROAD LAW.

Powers of the Maine Railroad Commissioners.

In the case of the Railroad Commissioners against the Portland & Oxford Central Company, the Maine Supreme Court held that railroads are public highways and are to be conducted in the furtherance of the public object of their creation. The courts and not the directors of a company are to determine finally the manner in which a company shall discharge the public duties imposed upon it by law. A writ of *mandamus* lies to compel the performance of such duties. The law empowering the State Railroad Commissioners to designate places where depots shall be erected and maintained for the accommodation of the public is constitutional and not inconsistent with the charter of the company.

A Lessor Company not Liable for the Management of the Leased Road.

In the case of Mahoney against the Atlantic and St. Lawrence Company, to recover damages for ejection from a train, the Maine Supreme Court held that the company was not liable for damages, the road being leased to and worked by the Grand Trunk Company, and there being no provision in the charter of the lessor to make it liable.

It has, however, been held in another suit, for damage done by fire from engines on the road, that the lessor is liable, there being a special provision in the statute authorizing the lease that no liability imposed by any general law should be removed from the lessor company and imposed on the lessee.

Liability for Representations of a Ticket Agent.

In the case of Burnham against the Grand Trunk Company, a passenger bought a ticket to a station on the Grand Trunk road on the representation of the ticket agent that it required but one ticket for him to reach his destination, and that he could stop over night at a station on the way on informing the conductor of his intention. He did so, but on the second day his ticket was refused by the conductor on the ground that it was endorsed "good for this day only," and the plaintiff, refusing to pay extra fare, was ejected from the train. The Maine Supreme Court held that in an action against the company the statements of the ticket agent were admissible as evidence, and that the conductor, being informed of those representations, had no right to expel the plaintiff from the train without first offering to return the excess of fare paid, or to deduct it from the amount of fare demanded for the second day's ride, though the rules of the company prohibited passengers from stopping over on such tickets.

Carrier's Lien—Car Misent.

In the case of Jones against the Boston & Albany Company, the plaintiff contracted with the Red Line Transit Company, an association composed of several companies, to carry a quantity of corn from Delavan, O., to East Boston. The corn was intended for Springfield, Maine, but by mistake of the shipper, or of a clerk at Toledo, was billed to Springfield, N. H. At Toledo the name Springfield was also substituted for Springfield. On arrival at East Boston one car was detached and sent to Andover, N. H., but was sent back to East Boston, where it was claimed by the plaintiff, with tender of charges from Delavan to East Boston. The Court held that plaintiff was entitled to recover the value in trover against the defendant company.

An Employee's Liability for Misconduct.

In the case of the Grand Trunk Railway against Nathan, Administrator, the Maine Supreme Court held that an employee is liable to an action at the suit of his master, when a third person has brought an action and recovered damages against the master for injuries sustained in consequence of the employee's negligence or misconduct. The employee is liable for costs and counsel fees in such third party's suit, incurred in the defense, he having been notified of its pending and having requested the master to defend.

THE SCRAP HEAP.

Railroad Manufactures.

James Harris & Co., of St. John, N. B., have just completed a contract to supply 200 coal cars and 1,172 car trucks for the Intercolonial Railway.

It is reported that Waterman & Beaver are about to sell the Pennsylvania Iron Works at Danville, Pa., to the Pennsylvania Railroad Company.

The Topeka (Kan.) rolling mills are now leased by the Kansas Rolling Mill Company, which owns the new mills at Rosedale, near Kansas City.

The Pulpit Company's Works in Detroit shipped last week 17 car-loads of material for Pullman sleeping cars to England. The cars will be put together on their arrival.

The Jackson & Woodin Manufacturing Company at Berwick, Pa., is furnishing the iron work for the new bridge over the Susquehanna at Catawissa.

Several experimental runs have been made at the new Edgar Thomson Steel Works, and regular work was to begin last Saturday, the preliminary trials having been very satisfactory.

The Fulton Foundry at Cleveland, O., is running on car wheels, and is also manufacturing a number of S. M. Carpenter's patent turn-tables for horse railroads.

The Indianapolis Rolling Mill is now at work on an order for the Terre Haute & Indianapolis road. The mills have orders enough on hand to keep them busy the rest of the year, even should no new ones be received.

The Womelsdorf (Pa.) Nut Works will start up shortly.

Meers. Joseph Bailey & Co. are about to build a new rolling mill on the Manatawny Creek at Glasgow, near Pottstown, Pa. It is said that the Cambria Iron Company at Johnstown, Pa.,

has made a further reduction of 8 per cent. in the wages of its employees.

The Detroit Bridge Company has just completed two new spans in the Toledo, Peoria & Warsaw bridge over the Illinois river.

The Pennsylvania Steel Works at Baldwin, Pa., are running on a large order for steel rails for the Central Railroad of New Jersey.

A Canada Bridge Letting.

The Chatham *Tri-Weekly Planet* of Aug. 27 says: "The members of the committee appointed by the Common Council with reference to the erection of an iron bridge across the River Thames at Kent Bridge, finally concluded at a meeting held in this town on Thursday last to accept the tender of Messrs. Clarke, Reeves & Co., of Philadelphia, for \$9,800. At first it was thought that it would be advisable to take the tender of Canton Company No. 1, Ohio, which was somewhat lower than Clarke & Co.'s; but upon carefully examining all the plans it was deemed that the one now selected was decidedly the best, and on the whole very much the cheapest, being higher by three feet than the Canton Company's, and besides in a tubular structure and consequently much stronger. The Canton Company's bridge was discovered to be only about 67 lbs. to the square foot instead of 100 lbs., as advertised for, while Clarke, Reeves & Co.'s bridge came up to the standard required. Of course it is expected that the new contractors will fully comply with all the provisions of the original specifications."

American Scales in Europe.

Fairbanks & Co., the great scale manufacturers of St. Johnsbury, Vt., have recently received an order for four of their patent iron-frame track scales from a leading railroad on the Continent of Europe, and a leading English railroad is now putting in Fairbanks track scales which, in view of the competition of European scale-makers on their own ground, is quite a triumph. During the first half of 1875 the Fairbanks manufactured at St. Johnsbury no less than 26,063 scales.

Working Under Difficulties.

A correspondent writes to us as follows: "Times have been extremely dull with me, and the Mason Works having done but little since January, 1874, I was obliged to fall back from the position of taking out new engines to what I could get, but I have not been idle. In the winter and spring of 1874, I designed and built a hoisting engine. I lost money on it. On the 25th of March, 1875, I signed a very strict contract to rebuild a locomotive to be completed before August 1, 1875, or make a forfeiture of the labor and material. This place (Southbridge, Mass.) is 75 miles from Boston on the New York & New England road. Boston is the nearest place where there are any facilities for doing such work, but I erected a shanty here, over a side track, and in two weeks of extreme cold weather I had a locomotive shop in full operation, doing my light work in a cotton mill, one-quarter of a mile away, and getting my heavy work from Taunton, Boston, etc. The country blacksmith shop was one-half mile distant. I specified to furnish a new tender-tank and frame, new set of driving-wheels, crank and straight shafts, new set of connecting-rods throughout, new set of guide-rods and slide gib, new smokestack, sand-box and head-light, new packing in the cylinders, new truck-boxes, cow-catcher, new springs, new pump valves and all lost motion taken up everywhere, new linings in the driving-boxes—in short, the whole to be new except the boiler, frame and cylinders. My help consisted of two boys, as I could work no first-class help on account of having no tools. I worked day and night for four months, did all my own designing of work and made my own calculations. There were many alterations to be made; the new work was all made from drawings made by me and sent to Taunton and Boston. On the 25th of July I came out on the road with a new engine of my own manufacture. I drew a large crowd to witness the first start. Everything works well and is in a first-class condition. The first train I took was 15 cars of coal up a ten-mile grade, 54 feet to the mile, 11 miles in 35 minutes, and made two stops. The owner has accepted her, well-satisfied. The work has been inspected by Mr. H. M. Britton, of the Master Mechanics' Association, now Superintendent of this road, the General Manager and Master Mechanic. She is 15 x 20 cylinder, 27 tons, with 4½ feet driving-wheels, 42-inch boiler, 113 flues, painted blue, with red wheels, and is as stylish as any inside-connected engine in the State. Between the driving-wheels I have got a gift frame with my name:

Re-built by
G. A. HAGGERTY, SOUTHBRIDGE, MASS.
1875.

"I am in hopes of securing a good position by this job. I have not made any money by the operation, but have made a good engine, which gives me more satisfaction. She is for sale, and is owned by a railroad contractor. I feel proud of it, as it is my first repair job, and think I have accomplished something that but few have done of my age, as I am not 23, and under every disadvantage."

American Street Cars for Russia.

The shops of John Stephenson & Co., in New York, have recently completed and shipped several cars for the St. Petersburg Tramway Company, of St. Petersburg, Russia. That company has also ordered several cars from English and Belgian makers, which are to be used in competition with the American cars, and the final contract for a large number of cars will be given to the maker whose work proves most satisfactory. The cars are somewhat different from those in use in this country, being arranged for 22 seats inside, and the same number on the top. The length of the cars is 26 feet. As no passengers will be allowed to stand, the cars, when loaded, can be drawn by two horses. The roofs are curved, and the seats on the top are reached by stairways at each end of the car. The empty cars weigh about 4,650 pounds, and cost, at schedule prices, \$1,125 each.

Performance of a Locomotive.

Mr. Geo. A. Cassidy writes to the *Locomotive Engineers' Monthly Journal* from Pittsburgh, as follows: "I wish you would note the mileage of one of our freight engines that has been doubling the road for the past 17 months. Engine 491 was built by the company in the Altoona shops, is 18 by 24 cylinder and 4½ foot wheel, weight 38 tons. She has been doubling the road for 17 months, and her mileage for that time amounts to 73,567 miles. She has lost but one round trip. Two hours from the time that she comes in she goes out again. The repairs made during the 17 months are one new cross-head, one new valve, one valve faced, brasses filed and packing examined when needed.

"For 46 miles of our division we can draw 18 cars, the other 35 miles we draw 36 cars, but that is overloading the engines. Sometimes we are obliged to lay on the siding for passenger trains, and then cannot get off the siding without help, so you may know our trains are very heavy."

Training Men to Run Locomotives.

"De Sanno" writes to the *Locomotive Engineers' Monthly Journal*: "To keep men firing three or four years I consider wrong from the fact that in that time the business becomes distasteful to them, and they lose what little ambition they had in the beginning. A fireman should go on the road one year, or long enough until he learns how to fire. From the road into the 'erecting' shop for one year, and there be thoroughly instructed in the use of tools, how to take down and put up machinery, and the mysteries of valves. If, at the end of his second year

he shows considerable proficiency in shop work, let him return to the road, as a graduating fireman, under instruction in running and managing a locomotive engine; at the same time he should be put on with a man who is master of his business, and who will thoroughly instruct him in the thousand and one little things that can only be learned on the road. At the end of the third year, if he shows the necessary skill, let his master mechanic give him a thorough examination in valves, the construction and running of a locomotive, and how he would act in cases of doubt and uncertainty on the road; if the candidate don't come up to the company's requirements, let him be dropped from the rolls, or return to the road as an ordinary fireman. If he passes a successful examination, return him to the road for promotion. Firemen, while in the shop, should be in a gang by themselves, under the instruction of a competent locomotive engineer and mechanist. I believe the above to be the only method whereby the coming engineer will be master of the situation."

Sentence of a Train Wrecker.

John Powell, of Trumbull, was convicted in the Connecticut Superior Court at Bridgeport, last week, of several attempts to wreck trains on the Housatonic Railroad. An appeal was made to the court for leniency, on the ground of good character, and that the prisoner was drunk at the time the attempts were made. The judge, after addressing a few words to the prisoner on the enormity of the offense and the terrible consequences that might have followed, sentenced him to 20 years' imprisonment in the State prison.

OLD AND NEW ROADS.

New Jersey & New York.

The suit brought before the Chancellor of New Jersey, an order has been made directing Receiver Jewett of the Erie Railway to restore at once the connection between the two roads at Hackensack Junction and to allow the trains to run to Jersey City over the Erie tracks as heretofore. The New Jersey & New York Company is required to pay promptly all the rental charges that may become due while the order is in force. The connecting tracks were accordingly replaced and trains began to run through to Jersey City September 1.

Gulf, Colorado & Santa Fe.

The grading is now completed for 32 miles westward from Galveston, Tex., and the working force has been transferred to the remaining section of ten miles, which will carry the road to Arcola.

Hempstead & Montgomery.

The contract for this road has been concluded and specifies that the road shall be built after "the Crews Prismoidal Patent," and shall be equipped with two ten-ton engines, one first and one second-class passenger car, one baggage and one express car, 20 flat, 10 box and one stock car. The engines are to draw 225 tons each, and the cars are to carry eight tons. The contract price is \$4,000 per mile.

Richmond, Rocky Mount & Pound Gap.

At a recent meeting in Richmond, Va., it was agreed to ask for a city subscription of \$500,000 from Richmond for this road, which is to run from the Richmond & Danville at Keysville, Va., west to a connection with the Kentucky system of roads at Pound Gap.

Wilmington & Western.

This company is trying to secure sufficient subscriptions to enable it to begin work on an extension of eight miles, from Landenberg, Pa., to Leonard's Mills. It is believed that this extension will bring much additional business to the road.

Erie & Meadville.

It is proposed to build a new line from Erie, Pa., to Cambridge and Meadville to connect with the Atlantic & Great Western. The intention is to extend the line hereafter from Meadville south to the coal and oil fields of Butler and Clarion counties. From Erie to Cambridge the line was located for the Pennsylvania Petroleum road some three years ago.

Northern Central.

The freight shed at Watkins, N. Y., caught fire early on the morning of August 28, and was entirely destroyed, with the engine-house, one engine and three passenger cars, one of them a Pullman sleeping car. There was no insurance and the loss is estimated at \$40,000.

About half the piers for the new wharf at Canton (Baltimore) are driven, and the work of dredging out the slips and grading the yard is actively progressing. A contract has been let for the masonry foundation of the new elevator.

Toledo, Peoria & Warsaw.

Two new wooden spans, each of 150 feet, have been completed for the bridge over the Illinois River at Peoria and the trestle approach to the bridge is being rebuilt. The Detroit Bridge Company is contractor and Mr. J. L. Patten sub-contractor.

Providence, Poneganett & Springfield.

The Chief Engineer, Mr. Everett, has been ordered to complete the location of the road at once. Steps are to be taken at once to consolidate the Rhode Island and Connecticut organizations and to secure subscriptions to the road as a through line from Providence, R. I., to Springfield, Mass.

Western Maryland.

The plans for the new depot in Baltimore include a main building 80 by 42 feet, having on the first floor a waiting room, ticket office, ladies' room, baggage-room, restaurant and other necessary offices, and on the second floor the general offices of the company. In the rear of this will be a shed 220 by 80 feet with two platforms and three tracks for passenger trains and one platform and two tracks for freight. Beyond this again will be an engine house 90 by 72 feet. The contract for the depot has been let to S. H. & J. Adams for \$25,000, and work will be begun as soon as the ground is cleared.

Vermont Central.

The sale of this road under the second mortgage has been again postponed, this time to October 20.

The Chancellor has denied the application of the bondholders to be allowed to employ an expert to examine the books and accounts of the trustees.

Testimony still continues to be taken on the accounts rendered by the trustees of their management of the trust up to its transfer to the Central Vermont Company. Mr. B. P. Cheney, of Boston, one of the trustees, testifies that he had no share in the active management of the trust, his share of the work being confined to the marketing of the loans and attending to other financial matters in Boston. He was principal manager of the express company which did business over the roads included in the trust. Counsel for the bondholders asked for a statement of the profits of that business, but the Masters who are hearing the case refused to require it. He was at first opposed to the Rutland and Ogdensburg leases, and only consented to them on the urgent solicitations of his colleagues.

Some members of the Advisory Committee of bond-holders, which examined the trustees' accounts from time to time, were examined. They testified that they had not looked into the accounts of the leased roads, and that they had not examined any vouchers, except in one or two cases. They had not ap-

proved the assistance given to the Mississauga road, or the manner in which the Montreal & Vermont Junction road was managed; in one case they had protested against the high prices paid for car wheels and castings. They had also disapproved of the secret service fund and of the extensive issue of free passes. It appeared from their statements that the examination of the accounts had been only partial.

Mr. Mills, Superintendent of Traffic, testified that the through freight business had arisen almost entirely since the formation of the National Line, and in consequence thereof.

The Vermont Supreme Court has granted the request of the relator in the *quo warranto* of Page vs. J. Gregory Smith and other directors of the Central Vermont Railroad Company, and gives permission for the filing of an indictment in the Supreme Court, without designating the place where it shall be filed.

Atlantic & Pacific Telegraph.

It is now said that the negotiations for a lease to the Western Union Company have fallen through, the board of directors of the Atlantic & Pacific having rejected the agreement made by the committee of conference.

Dividends.

The New York Central & Hudson River Company has declared a quarterly dividend of 2 per cent., payable October 15.

California Pacific.

In the suit of the German bondholders against this company, in San Francisco, Sept. 6, it was announced that a settlement had been made outside the courts. It is understood that the terms are the same as those offered the bondholders before the litigation.

Rutland.

The application for an injunction to restrain the Central Vermont from interfering with this company, or from preventing its resuming possession of its road, has been adjourned to October 1, when a hearing will be had.

Logansport, Crawfordsville & Southwestern.

The shops at Terre Haute, Ind., have been closed up and the tools removed to the shops of the Detroit, Eel River & Illinois road at Logansport, where the repair work of the road will hereafter be done.

Erie.

Sir Edward Watkin and the other members of the English Committee who are now in New York recently had a conference with the board of directors. It is said that the general principles of a reorganization were settled, and it was agreed that the views of the foreign security holders should have greater weight in the management.

It is reported that Mr. S. L. M. Barlow and two or three other members of the present board will shortly resign and that their places will be filled by new men.

Florence & Tuscaloosa.

Work is soon to be begun on this road, which is to be of the 36-foot gauge and about 100 miles long. It is to run from the Tennessee River at Florence, Ala., south to Tuscaloosa, on the river of the same name and the Alabama & Chattanooga road. It will pass through some rich coal and iron country.

Marquette & Mackinaw.

It is now said that the parties who agreed to build this road for the swamp lands granted by the State have thus far been unable to secure the necessary means to build it, and it is, therefore, very doubtful whether anything will be done this season.

Savannah & Charleston.

On application of the trustees under the first mortgage, the Chatham County (Ga.) Superior Court has appointed Mr. C. C. Olney Receiver of that small part of the road which lies in the State of Georgia. The object of this proceeding is that the indebtedness of the company in Georgia may be arranged and settled at the same time with the proceedings in South Carolina.

New York and Oswego Midland.

The Williams board of reorganizing trustees has issued a circular stating that they have been receiving bonds for several months and now have \$2,000,000, or one-fourth of the whole first-mortgage issue. This amount being insufficient to carry out their plan of reorganization, they have declared the agreement canceled and authorized the return of the bonds, if desired. They have, however, after consultation with the Cowdry committee, agreed to join forces with that committee, which now represents \$3,000,000 of bonds. They say that the Cowdry plan has been modified so as to remove the objections made to it. Three of the Williams committee, Messrs. Williams, Dodd and Houston, have been elected members of the new committee, which will consist of Conrad A. Jordan, Henry Amy, Frederick P. James, Edward Livingston, John E. Williams, Daniel Dodd, and Theodore Houston.

The committee therefore recommends bondholders whose bonds are deposited with the Union Trust Company to surrender their present certificate of deposit, and transfer their bonds to the new committee. By this means over \$5,000,000 of bonds will be at once consolidated, and the committee claims to have satisfactory assurance that the remaining \$3,000,000 will join the combination at once.

This is quite an important movement, and simplifies the question of reorganization, the opposing parties being reduced to two, one of which has a considerable majority.

South Mountain.

The work of grading this road between Harrisburg, Pa., and Hamburg is progressing steadily, and a large force is employed also on the branch from Bernville to Reading.

A correspondent of the Philadelphia *Press* asserts that this road is part of the scheme for that "gigantic" new line between Boston, New York and the West, of which we have heard so many times. According to this person local roads are to be built here and there, apparently for local purposes, but in such a manner that a few miles of connecting line will transform them into a through road across Pennsylvania. This time Jay Gould is furnishing the money for the "gigantic" scheme.

The South Mountain road is intended, according to the statements its managers have made, to form part of a new coal road from the anthracite regions to the Hudson River on the east and the Pennsylvania Railroad at Harrisburg on the west.

Connecticut & Passumpsic Rivers.

A quarrel, which apparently has been in progress for some time between two parties in this company, came to a head at the annual meeting in Weller River, Vt., September 1. The President, Mr. Raymond, stated that he was unable to make any financial report, as the late Superintendent and other officers had refused to furnish him with the necessary information. After a stormy meeting the majority of the stockholders voted to sustain the President.

Wisconsin Central.

The suit in which this company has been temporarily enjoined from any further issue of its first-mortgage bonds is brought by Mr. Geo. Reed, who was a stockholder in the Manitowoc & Mississippi Railroad Company, which was afterwards consolidated with the Wisconsin Central. The complaint, after rehearing the history of the company, claims that by the agreement of consolidation the Wisconsin Central was bound to include in its first mortgage the line of the Manitowoc and Mississippi road, which was from Marathon west to the Mississ-

sippi, about 130 miles, but that it did not do so, much to the detriment of the stockholders of that company; that no effort was made to build that line, or to issue bonds upon it for the purpose of building it. The Court is asked to order the execution of a supplemental mortgage covering that proposed line, and that bonds be issued and the proceeds used as a trust fund for the completion of that section of the road. The suit is brought in the Circuit Court for Milwaukee County.

Auction Sales of Railroad Securities.

In New York, Sept. 1, Erie & Niagara first-mortgage bonds sold at 10; Canada Southern Bridge Company first-mortgage, 25; Chicago & Canada Southern first-mortgage, 10.

The Proposed Fast Mail Train.

The fast mail train from New York to Chicago by the New York Central and Lake Shore roads is to begin running in a few days, as soon as all the arrangements can be completed. A fast train is also to be run over the Pennsylvania Railroad from New York to Pittsburgh. It will leave New York about 4 a.m., and make the run of 444 miles to Pittsburgh in 11 hours, about 40 miles an hour. The fastest express now run takes 13½ hours. At Pittsburgh the mails will be transferred to an express train for Cincinnati.

Philadelphia & Reading.

Several plans are on foot for the extension of minor branches of this road in Berks and Schuylkill counties in Pennsylvania. The Colebrookdale Railroad is to be extended to the Siesholtzville iron mines, and a branch has been surveyed from Manatawny to Labachsville, through an iron district. A branch has been surveyed from Monocacy on the main line of the Reading road, up Monocacy Creek to the ore banks of Oley township. The Moselem Branch is to be extended from Leesport Furnace by way of Ontalaune and the Maidencreek to Virginville, on the Reading and Lehigh road. There is also talk of completing the Allentown road from Kutztown to Port Clinton, which is all graded except the tunnel at Hamburg. All these extensions are short, of only local importance, and are intended to serve iron mines or furnaces.

Catasauqua & Fogelsville.

Work is soon to be begun on the extension of the Farmington Branch to Topton on the East Pennsylvania road, a distance of two miles.

Corning & Sodus Bay.

A correspondent informs us that this unfinished road has finally passed into the hands of the Corning, Cowanesque & Antrim Company, which will speedily push it through to Geneva, N. Y., giving a northern outlet for the coal from the Fall Brook mines, and a connection with the New York Central. It would also open up some new country, although a considerable part of it would necessarily be parallel and near to existing lines. The new extension will be built with 4 feet 8½ inches gauge. Mr. A. Hardt, Engineer of the Fall Brook Coal Company (which works the Corning, Cowanesque & Antrim road) is in charge of the new line,

Corning, Cowanesque & Antrim.

The gauge of this road is to be changed from 6 feet to 4 feet 8½ inches, and the officers of the road are actively engaged in making preparations for the change. The road is 53 miles long, from Corning, N. Y., on the Erie, southward to Antrim, Pa., with a branch from Lawrenceville to Elkland, 12 miles. Its main traffic is in coal, and it is leased and worked by the Fall Brook Coal Company.

New Orleans, Mobile & Texas.

The Civil Sheriff of Orleans Parish, La., has made another demand for possession of the road under the order of the State Court, but the United States Marshall again refused to give up the property, and still maintains the trustee in possession.

Atchison Bridge.

The celebration of the completion of the bridge over the Missouri River at Atchison took place in that city Sept. 2. A very large number of excursionists from other cities and the surrounding country visited the city.

American Bonds in Holland.

Dr. A. W. de Klerk writes under date of Aug. 27, from Amsterdam, that the chief business of the week in American railroad securities had been in Chicago & Northwestern and Erie shares, in West Wisconsin and the various issues of St. Paul & Pacific bonds. In Chicago & Northwestern prices advanced, purchases being made for New York, where prices were higher, and speculative purchases being made by Hollander, induced by a rumor that dividend of 4 or 5 per cent. would be paid on the preferred stock. Purchases of West Wisconsin bonds were continued for the Chicago & Northwestern Company, which is reported to buy all it can get. That day news of the foreclosure sale of the Rockford, Rock Island & St. Louis was received, without effect on the price of the bonds. Erie shares improved on the news of the Liverpool meeting in support of the committee, and the news of a proposed advance in trunk-line freight rates improved the market. Generally there was a bad tone in the whole market, and very little business; and a report that Russia would send a note to Turkey raised great fears as to the effect on the market the next week.

Rockford, Rock Island & St. Louis.

The *German-American Economist* says that after the reception of the news that this road had been bought for the bondholders, the price of bonds on the Frankfort Exchange rose from 7½ to 10½%.

A general convention of the bondholders represented by the committee which purchased the road was to be held in Frankfort, Sept. 10, to discuss proposals for reselling or renting the road, and measures for providing the purchase price.

Indianapolis, Cincinnati & Lafayette.

The Indianapolis *Journal* of September 1 says: "The pooling arrangement which has existed for a couple of years between the Indianapolis, Cincinnati & Lafayette and the Cincinnati, Hamilton & Indianapolis roads terminated yesterday by expiration of time agreed upon. Neither of the companies seem anxious to renew the arrangement, and without doubt a healthy competition will arise between the two lines, and a slight reduction in passenger fares may be expected. The management of both roads, however, are too wise to adopt any course which will bring about such suicidal rates as have been prevailing upon some other lines."

European & North American.

The Treasury Department, at Washington, last week, gave notice that the certificates of indebtedness of 1870, issued on account of claims of the State of Massachusetts and Maine, for money expended during the war of 1812, and transferred to the European & North American Railroad Company, would be paid September 1 by the Assistant Treasury at New York. The amount of principal is \$678,000.

Perkiomen.

The track through the long tunnel on this road is now laid, and is being finished up and ballasted. The road on both sides of the tunnel is complete, and the whole line was to be opened to travel September 10. The tunnel is 1,800 feet long, and has been completed in 18 months from the commencement of work. The new road is 36½ miles long, from the main line of the Philadelphia & Reading road, 23 miles northeast of Philadelphia, northward to the East Pennsylvania Branch of the same road near Emmaus. It is parallel to and eight or ten miles west of the North Pennsylvania road for its whole length. It has a branch 38 miles long, from Mt. Stewart Junction eastward to

been in operation from Perkiomen Junction north to Pennsylvania, 23½ miles, for some time. It is leased and worked by the Philadelphia & Reading Company.

Chester & Lenoir.

The work of grading this road from Dallas, N. C., northward to Lincolnton has been let to Messrs. C. & W. H. Motz, who began work last week. The distance is about 15 miles. The grading is already completed from the present terminus of the road at Yorkville, S. C., north to Dallas.

St. Louis, Keosauqua & St. Paul.

On application of some of the creditors the Iowa District Court has appointed Mr. E. P. Howard, of Keosauqua, Ia., Receiver of this road. Another application for a receiver is pending before the District Court at Keokuk. The company has about four miles of narrow-gauge road completed, from Keosauqua to the Keokuk & Des Moines at Summit.

New York Central & Hudson River.

This company is now erecting extensive buildings adjoining the new stock yards at Sixty-first street, New York, for the reception of small stock—hogs, sheep, calves, etc. The buildings are of brick, 372 by 200 feet, a part being four and the rest three stories high. The larger division will be used for sheep and calves and the smaller for hogs. Each floor is divided into 38 pens, each of which will hold a car-load of animals, and these pens can be divided into smaller ones by moveable fences. The entrances to the upper floors are by galleries on the outside of the buildings. Arrangements are made for the cleaning and ventilation of the buildings, and there is an abundant supply of water. Two floors of the sheep house are ready for use, and work is in progress on the rest of the building.

Ohio & Mississippi.

The new track on the Springfield Division from Pana, Ill., east to Tower Hill, seven miles, has been completed, and trains have begun to use it. Heretofore they have run over the track of the St. Louis, Alton & Terre Haute road between the two points. The road now crosses the St. Louis, Alton & Terre Haute at Tower Hill, and runs parallel to and north of that road to Pana.

Utica & Black River.

The track of the Morristown Extension is now laid to Brier Hill in Morristown, about 20 miles northward from the late terminus at Redwood, N. Y., and 28 miles from the junction with the company's Clayton Division at Theresa. Regular trains will soon be running as far as Hammond.

Nothing definite has been done as to the proposed extension from Morristown to Ogdensburg, but it is said that the project has not been abandoned, and negotiations are still in progress.

Burlington, Cedar Rapids & Minnesota.

Holders of certificates issued by the Farmers' Loan & Trust Company for funded coupons of the first-mortgage (main line) bonds are requested to return the same to the Farmers' Loan & Trust Company and take up the coupons deposited under the funding agreement. All of such bondholders who have not communicated with the committee are requested to send their addresses, with the numbers of the bonds held by them, to Charles L. Frost, Trustee, P. O. Box 4,024, New York City, in order that he may be able to communicate with them in reference to all matters affecting their interests.

North Shore, of Canada.

Quebec papers announce that the Provincial Government has resolved to undertake the completion of this line from Quebec to Montreal as a government work. The question of taking up the Northern Colonization road also is under consideration.

Chicago, Burlington & Quincy.

It is reported that this company has made arrangements to borrow 700 cars to meet expected demands for freight accommodation. The Northwestern and Milwaukee & St. Paul are also reported to have borrowed a large number of cars.

Gilman, Clinton & Springfield.

Mr. Seyton, the agent for the trustees, has prepared the necessary affidavits with respect to Mr. Hinckley's refusal to deliver up the money balance in his possession, and has submitted them to the Court. Mr. Hinckley in a published card says: "I desire to say that I promptly delivered the road on demand to the agent of the trustees, with a portion of the money, and that by the advice of Judge Tipton, to whose Court I am alone responsible, I have retained in my hands money enough to discharge my personal liabilities in the matter; and when the vouchers now in my hands and others in course of adjustment are credited, and the books are balanced and I am released from personal liability, I am ready to pay over all the balance, if any, in my hands."

St. Louis & Southeastern.

It is reported that in order to put an end to the war between this company and the Louisville & Nashville, an offer has been made to restore the Southeastern to membership in the Green Line. The merchants of Nashville have held a meeting and appointed a committee to see if something cannot be done to put an end to the war, which still continues to rage with unabated force.

Havana, Rantoul & Eastern.

It is said that this company has contracted for iron for 35 miles of road and for several locomotives; that track laying will be begun at Rantoul, Ill., and will progress westward as fast as material is received.

The Worcester Union Depot.

The new union depot at Worcester, Mass., which has been under construction for some time past, is completed and trains began to run into it Sept. 6. The Boston & Albany Company has offered the use of its tracks to the Norwich & Worcester, the Providence & Worcester and the Worcester & Nashua companies, in order that they may make an immediate connection with the new depot.

St. Louis, Keokuk & Northwestern.

The Keokuk (Ia.) *Gate City* says that officers of this company (formerly the Mississippi Valley & Western) have been consulting with the officers of the Keokuk, Iowa City & Minnesota Company with reference to a consolidation of the two companies and a revival of the last-named project.

Sodus Bay, Corning & New York.

The *Commercial and Financial Chronicle* says: "Messrs. Turner, Kirkland & McClure, as attorneys for the Farmers' Loan and Trust Company, have filed a complaint for the foreclosure of the mortgage made to that company by the Sodus Bay, Corning & New York Railroad Company, to secure a proposed issue of bonds to the amount of \$1,500,000. Of these bonds only 300 of \$1,000 each were issued. The venue is laid in Steuben County, New York."

Pacific Junction.

The City Council of Ottawa, Can., has voted \$10,000 in aid of this projected road from Gravenhurst to Lake Nipissing, which is to connect the railroad system of Ontario with the Canadian Pacific.

Prince Edward Island.

This road is now in operation from Tignish, on the northwestern end of the island, east by south to Georgetown, on the eastern end, a distance of 152 miles. There is also at the eastern end, where the island is much wider than at the western, a branch 38 miles long, from Mt. Stewart Junction eastward to

Souris. This is 190 miles operated in all, and there is very little room on the island for any more railroad. The road is of 3 feet 6 inches gauge, and, we believe, belongs to the Provincial Government.

Pennsylvania & Erie.

This new company now operates the old Dagusahonda Railroad, from Dagusahonda, Pa., to Earley. It is known as the Earley Branch.

Palisade & Eureka.

Work is progressing on this road, and track is being laid southward from the present terminus. The graders are now at work in the Garden Pass.

Vaca Valley.

Trains are now running regularly over this branch of the California Pacific from Vacaville, Cal., to Winter's, 12 miles.

Woodland & Colusa.

The contractors, Turton & Knox, have broken ground, and have a considerable force at work, which is to be gradually increased as the work progresses.

Stockton & Ione.

The first locomotive has been received from the Mason Machine Works at Taunton, Mass.

Central Pacific.

It is said that the engineers have pronounced the route over the Cascades from the Rogue River Valley impracticable. Another line will therefore have to be found for the extension of the California & Oregon Division. There is talk of building from Redding up the Little Sacramento, through Shasta Valley and up the Klamath River, running thence to Eugene by way of Yainox or Big Marsh. It is said that the extension is to be begun soon.

Connecticut River.

This company made a reduction of 10 per cent. in all salaries and wages, September 1, the reason being decrease in business and low rates. An order has also been issued abolishing all free passes from and after the same date.

New Castle & Franklin.

A preliminary survey has been made of one line for the extension of this road from Stoneboro, Pa., to Meadville. This line is by way of Sandy Creek and New Vernon, and another will be run by Sheakleyville and the Conneaut marsh.

Winona & Southwestern.

This project has been revived, and a survey is to be made from Winona, Minn., to Hesper, Ia. It is now proposed to make it a narrow-gauge road.

Cincinnati Southern.

It having been found that the contractors for the masonry of the Kentucky River bridge were unable to complete it within the specified time, the work was re-advertised, and the bids were opened August 31. The contract was let to Smith, Dandridge & Co., of Baltimore, Md., for \$143,820. There was one lower bid, that of Harmon & Harmon, for \$139,500, but it was rejected for other reasons. The other bids were as follows: Mason, Shannahan & Co., \$153,000; R. G. Huston & Co., \$155,100; McMahon & Condon, \$165,000; Ghent & Co., \$166,800; John S. Wolf & Co., \$168,696; John W. Saulsbaugh & Co., \$186,088.15; Reynolds & Saulsbaugh, \$196,816.20.

The trustees have advertised for bids for the grading and masonry of the sections from 25 to 39, both inclusive, which extend from the Kentucky River to South Danville.

Fall River.

The grading of this road is all finished, and the track is being laid. As fast as the iron is down the road is finished up and ballasted. It is thought that trains will be run about October 1.

Hamilton & Northwestern.

The people of Hamilton, Ont., have voted by a large majority in favor of the city subscription of \$100,000 to the stock of this company. It is said that this will secure the immediate construction of the road.

Canada Central.

The contracts for grading the extension of this road to Pemroke, Ont., have all been let. There are 37 sections, divided among 12 firms, of which only one is from the United States, Rogers, Kelly & Co., of Rouse's Point, N. Y., who have sections 18, 19 and 20.

Atchison, Topeka & Santa Fe.

The extension from Granada, Col., westward is now completed to West Las Animas, 54½ miles from Granada and 536 miles from Atchison. This extension has been built by the Pueblo & Arkansas Valley Company, which is a separate corporation, but is identified with the Atchison, Topeka & Santa Fe, by the stockholders and officers being the same.

The latter company now works 629 miles of road—the main line from Atchison to West Las Animas, 536 miles; the branch from Topeka to Kansas City, 66 miles, and that from Newton to Wichita, 27 miles. The road is organized in six divisions, as follows: The Atchison Division, Atchison to Emporia Junction, 111 miles; Kansas City Division, Kansas City to Topeka, 66 miles; Cottonwood Valley Division, Emporia Junction to Newton, 74.2 miles, with branch to Wichita, 27 miles; Newton Division, Newton to Dodge City, 167.6 miles; Dodge City Division, Dodge City to Granada, 128.3 miles; Colorado Division, Granada to West Las Animas, 54.5 miles. Regular trains are now running over all of the company's lines.

The stations on the new section of line with the distances from Granada are: Blackwell, 17.4 miles; Caddo, 33.5; Las Animas, 50.1; West Las Animas, 54.5. A further extension to Pueblo is contemplated. There will probably be a very active competition between this company and the Kansas Pacific for the trade of New Mexico and Southern Colorado.

Japanese Railroads.

In the report of the British Consulate for Hiogo and Osaka for 1874, dated June 16, 1875, we find the following passages: "The railway from Kobe to Osaka (20½ miles) was opened for passenger traffic on the 11th of May, 1874, so that the line has not yet been a year in operation. Parcels and goods have been carried for shorter periods, and the receipts show a steady increase, amounting by the latest published returns to about 250 per mile per week. The competition by steamers, for passengers especially, with the railway between Kobe and Osaka is rapidly declining according as the people of the country become more sensible of the advantages of time and punctuality. The line is worked with great credit to the Japanese and all concerned, and no accident causing injury to a single passenger has occurred since it was opened."

"Most of the subordinate officials are Japanese. The engineers, but not the firemen and foremen plate-layers, are foreigners. The works of the line, which include large river bridges, three short tunnels and some heavy earthwork, appear to have been constructed with care and solidity. They are reported to have withstood the action of heavy floods last year without injury or interruption of the traffic."

"From Osaka to Kiyoto (27 miles) the works begun last year are now in active progress, and it is believed that notwithstanding the large numbers of rivers to be bridged over, there is a fair prospect of the line being opened up to Kiyoto during the year 1876."

"With the object of connecting the port of Tsuruga on the

north coast with Kobe and the Bay of Osaka, surveys have been made and the proposed line of railway marked out round the eastern side of Bima Lake, from Kyoto and Otsu to Slicotsu and Tsuruga. I am also informed that further surveys are in progress from the lake towards the interior, with the view eventually to the gaining of Kyoto and Tokio by a central trunk line, which will open up largely tracts of country now sorely in need of improved means of communication."

Traffic of Kube & Osaka Line from May 11 to Dec. 31, 1874.

Number of passengers, 505,733; receipts for same..... \$135,440
Parcels and luggage: number of parcels, 15,771; receipts for same..... 3,118
Goods: weight, piculs, 1,981; amounts for same..... 233

Total receipts..... \$138,791

This railway was opened for passenger traffic on the 11th May, 1874, and for goods on the 1st December, same year.

Bedford, Springville, Owensboro & Bloomfield.

The directors have closed a contract with Clark, Buell & Co., of Chicago to build this road from Bedford, Ind., on the Louisville, New Albany & Chicago, west by north to Bloomfield, a distance of about 36 miles. The road is to be completed by the close of the year. It will open a district where there are large coal deposits, and it is intended to be part of a line from Louisville to St. Louis.

Paducah & Memphis.

Judge Emmons, of the United States Circuit Court, sitting in chambers at Detroit, Mich., has been hearing arguments on the appointment of a receiver in the foreclosure suit. The company desires the appointment of Judge Trimble, of Kentucky. At the close of the arguments Judge Emmons recommended a compromise between the different interests and adjourned the hearing 20 days for that purpose.

ANNUAL REPORTS.

Central Pacific.

This company in 1874 owned and worked 1,212.83 miles of railroad, the same as during the previous year, except that 6.1 miles, the branch from San Leandro to Haywards, near the San Francisco terminus, were taken up last year, and the mileage decreased by so much.

The lines worked are:

	Miles.
San Francisco to Ogden.....	882.89
Oregon Division, Roseville to Redding.....	151.45
Viasia Division, Lathrop to Goshen.....	146.30
Oakland and Alameda branches—	
Oakland Wharf to Brooklyn.....	5.67
Oakland Point to Mastick's.....	3.79
Alameda Wharf to Sausalito.....	5.19
San Jose Branch, Niles to San Jose.....	17.54
Total.....	1,212.83

These lines have 146.32 miles of sidings, which is an addition of 5.83 miles during the year.

The company at the close of the year also worked under lease 74 miles of the San Joaquin Valley Extension of the Southern Pacific Railroad, 32.1 miles of which was first opened Nov. 8, 1874.

The equipment owned by the company consists of:

Locomotives..... 188

Passenger-train cars (first-class, 91; second-class and smoking, 52; passenger, 23; mail and express, 19; baggage, 23)..... 208

Freight-train cars (2,051 box, 1,499 platform, 55 caboose, 110 dump cars).....

Service cars (1 directors, 1 superintendent's, 1 pay, 177 section, 3 track-laying, 2 wrecking, 218 hand cars and 8 snow plows)..... 411

The changes in the equipment during the year were the addition of two baggage cars and one snow plow; but the company constructed considerable new rolling stock for the Southern Pacific. Of the platform cars, 33 are equipped with tanks and are used for water cars.

Besides this railroad property, the company owns six ferry steamers, of from 334 to 1,012 tons: 24 river steamers, of from 102 to 1,625 tons; and 17 barges. It has under construction a transfer ferry boat capable of transferring 20 freight cars at once between Oakland and San Francisco.

The company had land grants originally amounting to 11,722,400 acres, of which at the end of June, 1875, it had sold 395,865 acres at the average price of \$4.23 gold per acre. The value of the company's assets is reported as follows in the report of the President:

1,213 miles main line of railroad and telegraph, with all necessary sidings, turn-outs, switches, turn-tables, depots, depot buildings, round-houses and snow-galleries; also wharves, slips, piers and steamers for ferries at San Francisco.....	(cost) \$131,303,500
Equipments for same—locomotives, cars, snow-plows, etc.....	(cost) 6,201,638
Real estate purchased for use of road.....	(cost) 1,017,696
Shops and machinery.....	(cost) 1,398,097
Telegraph instruments, furniture, safes, etc., at stations and offices.....	(cost) 112,941
Sacramento River steamers.....	(cost) 769,784
Material on hand:	
For track repairs.....	480,828
In shops for constructing and repairs (per inventory).....	808,595
In store of supply department (per inventory) (cost) Fuel on hand (per inventory).....	47,709
Balance of accounts outstanding after deducting obligations.....	3,007,716
Farming lands—estimated value.....	29,543,000
Undivided half 60 acres land in Mission Bay, in San Francisco; 500 acres water front at Oakland; about 14 acres and water front at Sacramento—estimated value, independent of improvements.....	7,750,000
Cash.....	1,134,645

Total..... \$183,971,064

The liabilities are:

Capital stock paid in..... \$54,521,000

Funded debt..... 54,521,000

Less sinking fund..... 1,451,905

United States subsidy bonds..... 53,069,000

Total (\$11,460 per mile)..... \$135,200,275

The capital stock paid in is at the rate of \$44,947 per mile of road, the company's funded debt \$43,750 per mile; the United States subsidy bonds, which with the accumulated interest will become a lien on the road at maturity, is \$22,964 per mile.

There is \$8,333,300 of capital stock subscribed, but not paid in, held in trust for the company.

During the year the only change in the capital account was a reduction of the bonded debt by the redemption of \$135,000 of land-grant bonds, and \$429,000 of these bonds have been redeemed since.

The bonded debt bears interest (in gold) as follows:

Principal.	Interest.
8 per cent. \$500,000	\$40,000
7 per cent. 2,983,000	203,810
6 per cent. 51,038,000	3,062,260
	\$4,521,000
	\$3,311,000

Thus the interest per mile paid by the company is \$2,730, and the interest paid by the United States on the subsidy bonds is \$1,378 per mile more.

The work done during the year was:

Engine mileage.	1873.	1874.	PER CENT.
Passenger.....	1,351,740	1,381,204	Inc. 1.51
Freight.....	2,748,556	2,865,156	4.37
Stitching.....	726,217	704,270	2.88
Other.....	195,419	309,622	67.09
Total.....	5,010,932	5,214,441	4.06
Car mileage.....	49,268,302	48,280,608	0.025
Passenger carried.....	3,280,171	3,362,729	2.77
Freight mileage.....	120,874,301	134,307,087	11.2
Tons of freight carried.....	1,028,602	1,096,287	6.5
Tonnage mileage.....	348,793,085	280,965,918	12.7

The account of passengers carried includes 3,238,280 ferry passengers in 1874 and 2,621,976 in 1873.

The following details of freight traffic are given in the report of the General Freight Agent:

The tonnage mileage was:

Local freight.....	1873.	1874.
Through freight.....	107,382,059	109,735,748
Company's freight.....	95,660,334	132,415,584
Total.....	205,750,692	232,446,606

Total freight..... 248,793,085 280,965,918

"The average charge per ton per mile on freight (exclusive of company's freight) was in 1873, 3.675 cents, and in 1874 3.257 cents.

"Showing a decrease of 0.418 cents or 11.37 per cent.

"Of the local freight there were forwarded to the general markets from the agricultural districts, 266,729,777 pounds of grain, as follows:

"First six months..... 51,218,814 pound

"Last six months..... 215,510,903 "

"From which we earned \$431,022.82 coin."

A table of the principal items of through freight shows that of the shipments eastward barley was the heaviest item, amounting to 22,652 tons in 1874, against 1,262 in 1873; wool second (16,020 tons against 14,500 in 1873); tea third, with 5,889 tons, against 6,363 in 1873.

The tonnages of some of the principal items of through freight for two years were:

	1874.	1873.
Barley.....	22,652	1,262
Wool.....	16,020	14,500
Tos.....	5,889	6,363
Salmon.....	3,239	3,812
Wine.....	2,703	1,902
Green fruit.....	2,483	1,448
Coffee.....	463	1,05

The tonnages of items through freight westward amounting to more than 1,000 tons either year were:

	1874.	1873.
Domestics.....	5,031	6,584
Wagons.....	3,596	2,519
Tobacco.....	3,549	2,488
Hams.....	3,043	3,206
Agricultural implements.....	2,906	

on the Sierra Nevada; and 26½ miles of track was renewed with iron rails from the Pacific Rolling Mill. The directors, last October, resolved to make all renewals of the main track with steel thereafter.

The length of new snow sheds built was 9,959 feet, including 3,882 feet in renewing that which had been burned during the year.

With report for the year 1874 are given the earnings and working expenses for the first half of the current year, as follows:

	Coin.	Currency.
Gross earnings.	\$4,103,482 44	\$3,176,651 08
Working expenses.	2,928,864 54	121,475 71
Net earnings.	\$1,174,617 90	\$3,055,175 37
Net earnings 1874.	1,069,297 83	2,414,587 65

Increase 1875. \$105,320 07 \$40,587 72

At the current price of gold the total increase in currency is about \$761,340, which is nearly 5 per cent. of the net earnings of the whole year 1874. The proportion of working expenses is 44 per cent.

The net income of 1874, amounting to \$8,342,899, was chiefly expended in the payment of \$3,389,925 of interest, a dividend of 5 per cent., amounting to \$2,713,775, discount of currency receipts \$458,802, while the balance to credit was increased by \$1,832,000. The company has announced its intention to pay 8 per cent. dividends on its stock hereafter. This will require \$3,596 per mile of road, while the regular interest on the present amount of bonds issued by the company requires \$2,730, so that \$6,326 gold, net earnings, will be required to pay interest and dividends, which is equal to last year's net earnings, with gold at 1.12½.

Rome, Watertown & Ogdensburg.

During the fiscal year ending December 31, this company worked the following lines:

	Miles.
Rome, N. Y., north by east to Ogdensburg.	141.11
Watertown to Cape Vincent.	24.34
DeKalb to Potsdam Junction.	24.28
Oswego & Rome road, Richland to Oswego, leased.	28.59
Total.	218.21

There are 28.38 miles of second track and sidings. Since the close of the year the company has acquired by consolidation the old Lake Ontario Shore road, which will, when completed, extend from Oswego westward to the Niagara River, and which is already in operation to the Genesee, with track laid some distance beyond. The Syracuse Northern road, which forms a connecting link 45 miles long from the company's main line at Sandy Creek to Syracuse, has also been purchased in the interest of the company.

The capital account at the close of the year was as follows:

	\$3,147,600 00
Funded debt, less sinking fund (\$21,767 per mile).	4,127,716 19
Bills payable, unclaimed dividends, Oswego & Rome sinking fund.	86,038 75

Total (\$88,820 per mile). \$7,361,354 94

The earnings of the road for the year were as follows:

	1874.	1873.	Inc. or Dec.	P. C.
From passengers.	\$427,876 77	\$436,511 63	Dec. 86,865 86	2.0
Freight.	626,049 60	671,081 48	Dec. 45,031 88	6.7
Mail service.	23,621 00	21,250 00	Inc. 2,371 00	11.1
Exps'ns and miscellaneous.	95,553 85	65,640 06	Inc. 29,913 59	45.6

Total receipts. \$1,172,901 02 \$1,194,513 17 Dec. \$21,612 15 1.8

Exps'ns and taxes. 770,284 95 870,066 90 Dec. 99,805 85 11.5

Net earnings. \$402,644 07 \$324,446 37 Inc. \$78,197 70 24.1

Gross earnings per mile. 5,375 10 5,474 14 Dec. 99 04 1.8

Net earn. per mile. 1,845 21 1,486 88 Inc. 358 36 24.1

Per cent. of exp's. 65.87 72.84 Dec. 7.19 9.8

The income account for the year was as follows:

Balance from 1873. \$142,626 99

Net earnings. 402,644 07

Received from fire losses and premium on bonds. 2,877 50

Balance to 1875. \$110,659 79

The President's report says:

"The largest falling off in traffic has been in the articles of iron ore and sawed lumber, in the former 27,220 tons less than last year, the freight on which would amount to about \$50,000; and probably about the same amount of decrease in lumber. This shows that while there has been so great a decline in these articles, which pay a very low rate, there has been an increase to some extent in agricultural and other products, which pay much better.

"The local passenger business has been less than last year, but the through mileage shows a gain. This latter is mainly from the increased pleasure travel to the St. Lawrence.

"Last year, in view of the largely increased demand for the iron ores of this region, also from the assurance of others, as well as our own convictions, it was thought that the demand for transportation would soon exceed the ability of our company to supply; and hence considerable additions were made to the rolling stock, now needed for our other lines and business.

"Moreover, we are satisfied this trade is not lost to us, but will at no very distant day become larger than ever before; this will occur whenever the general business industries of the country again become prosperous, and especially when the present extreme depression in the iron trade shall pass away.

"We are sure that the gain in net receipts as shown does not arise from any failure to maintain the road and property of the company fully up to its former standard. It comes in part from the improved quality of the freight traffic and better rates on some part of the line; also to a reduction of force, the number of trains, wages and other items of expenditure which we have felt compelled to make in order to meet as far as possible the falling off in receipts. It is always at such periods that we are forced to adopt the most rigid economy, and to watch more closely every species of outlay.

"More than 2,000 tons of new iron and 108,000 new ties have been used during the year, in the laying of which iron fish-bars with bolts and nuts have been made use of. New buildings, bridges, culverts and many other permanent additions have been made, most of which has been charged in the expenses of the year, leaving no doubt of the fact that the present average standard of excellence has never before been attained. But little new equipment has been added this year beyond that which has been done to replace old numbers and the rebuilding of more cars than usual. The fact that less new work has been done has given opportunity, time and room for a thorough overhauling in every case where it was deemed best, both as regards locomotives, coaches and cars of every description.

"The stockholders have already been advised of the recent acquisition by this company of additional railroad property, thus securing a westward extension of our former line."

Mineral Range.
This company owns a road of 3 feet gauge from Hancock, Mich., to Calumet, 12½ miles. There are 1½ miles of sidings.

The maximum grade is 211 feet per mile, which is maintained for 1,300 yards from Hancock, after which there are two miles of 146 feet grade per mile. For the rest of the road the maximum grade is 60 feet. The minimum radius of curvature is 410 feet.

The equipment consists of 2 engines, 2 passenger and 2 smoking and baggage cars; 8 box, 16 platform and 1 caboose car, 4 hand cars.

The capital account is as follows:

Stock (\$8,122 per mile).	\$101,525 00
Bonds, 8 per cent. (\$13,400 per mile).	167,500 00
Floating debt (\$6,528 per mile).	81,800 94

Total (\$26,050 per mile). \$350,026 94

The actual cost of road and equipment is stated at \$335,949.93, or \$26,875.94 per mile.

For the year ending December 31, 1874, the first full year since the road was opened, the earnings were:

From passengers.	\$38,955 07
Freight.	60,077 05
Extra baggage.	88 15

Total earnings (\$7,929.69 per mile). \$99,121 17

Working expenses (5.25 per cent.). 55,857 55

Net earnings (\$3,501.09 per mile). \$43,763 62

Interest and State tax. 19,866 60

Balance of profit. \$23,897 02

The work done for the year was as follows:

Train mileage.	38,710
Passengers carried.	70,825
Passenger mileage.	772,187
Tons freight carried.	60,059
Tonnage mileage.	515,296

The average rate per ton per mile was 11.66 cents; per passenger per mile 5.04 cents. The average expense was 5.90 cents per ton and 2.81 cents per passenger per mile. The average train taken was two loaded freight and two passenger cars at an average speed of 15 miles per hour, or 12 miles on the heavy grades. The average passengers per car trip was 20.8; tons of freight per car moved 5.1. The passenger cars weigh 7½ tons, box cars 5½ and flat cars 4 tons. The engines now in use are of the Mogul pattern with 12x16 cylinders and weigh 20 tons. The road is a difficult one to work in winter by reason of the heavy snows and high winds; the cost of clearing the track of snow was 4.98 per cent. of the working expenses. On account of the short haul, the proportion of terminal expenses to the whole freight expense is very large.

St. Louis, Kansas City & Northern.

The last report of this company covers a period of eleven months only, the fiscal year having been changed so as to end with December instead of January. The lines worked were as follows:

Lines owned:	Miles.
St. Louis, Mo., to Han. & St. Jo. Junction, near Kansas City.	205.50
Moerley, Mo., to Iowa line near Coatesville.	87.50
Total owned.	353.00

Lines leased:

Hannibal & St. Joseph, Junction to Kansas City.	9.50
Bonneville & Boone County, Centralia to Columbia.	22.00
St. Louis & Cedar Rapids, Iowa line to Ottumwa.	43.25
St. Joseph & St. Louis, North Lexington to St. Joseph.	76.25

Total leased. 151.00

Making 504 miles worked in all. The St. Louis, Council Bluffs & Omaha Road, 41.5 miles, was worked four months of the year up to June 1; it now, with the Chillicothe & Brunswick road, 36.25 miles (which was also formerly worked by this company), worked by other parties, but under a friendly agreement. The St. Joseph & St. Louis road was leased from June 1 under an agreement to pay \$10,000 per annum for two years, \$35,000 for three years, and thereafter 30 per cent. of gross receipts, guaranteeing a minimum of \$25,000. Since the close of the year, amended leases of the Boone County and the St. Louis & Cedar Rapids roads have been concluded.

The capital account at the close of the year was as follows:

Common stock.	\$12,000,000 00
Preferred stock.	12,000,000 00

Total stock (\$67,969 per mile owned).	\$24,000,000 00
First-mortgage bonds.	6,000,000 00
Real-estate bonds.	615,000 00

Total funded debt (\$18,739 per mile). \$6,615,000 00

Funding debt less balances due. 791,702 95

Total (\$88,971 per mile). \$31,406,702 95

The former real-estate mortgage has been canceled and the bonds retired. A new mortgage has been executed for \$30,000, which is a first lien upon the real estate and a second upon the other property of the company. Of these new bonds \$615,000 were sold to stockholders for one-half cash and one-half preferred stock. More have been sold since the close of the year.

The earnings of the road were as follows, those for 1873 being given also, although a comparison can hardly be made, those for 1874 being for eleven months only:

	1874.	1873.
Passengers.	\$781,649 10	\$907,522 87
Freight.	1,494,946 13	1,714,936 23
Mail, express, etc.	129,055 36	132,735 13

Total. \$2,405,600 59 \$2,755,194 23

Working expenses. 1,744,622 74 2,084,664 12

Net earnings. \$661,027 85 \$670,530 11

Gross earnings per mile. 4,899 49 4,758 54

Net earnings per mile. 1,346 59 1,188 04

Per cent. of expense. 73.52 75.60

Part of the expenses were for repairs of road and equipment which belonged properly to the previous year. Deducting these the per cent. of expenses would be 69.21 for the eleven months. The earnings for the last five months show a large increase over and the expenses a decrease from the first six.

The President's report says:

"The present board was elected April 15, 1874. The first three months were consumed in efforts to ascertain the exact condition of the property financially, and in respect to its connections and arrangements for business.

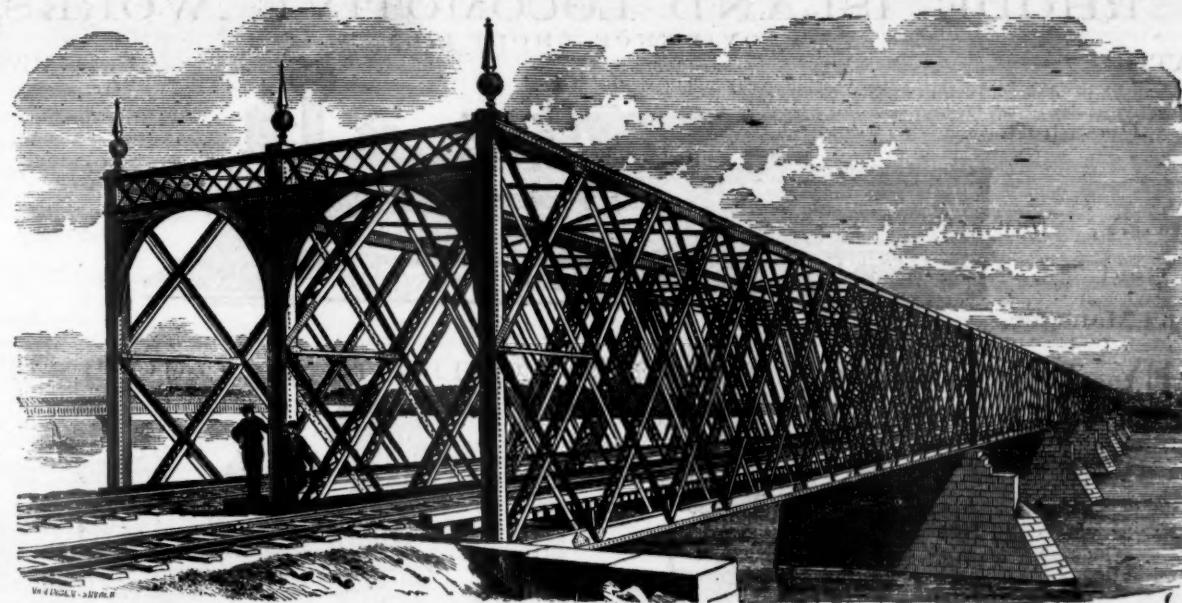
"An immense mass of unsettled claims for rebates and claims from connecting roads were found, and were urgently pressed for settlement. The mass of claims of this character have been reduced to some 261, having disposed of \$580,995 of them for the sum of \$69,550.

"The agreement of May, 1872, between the Pennsylvania Company, the Chicago & Alton Railroad Company, and the Kansas Pacific Railway Company, providing, in connection with your road, for a great through line from the Atlantic to the Pacific—with the purpose of controlling the mass of traffic in passengers and freight—utterly failed of its object, for no other reason than an entire neglect of the parties to carry out their agreement. At your last annual meeting you considered this question, and we were instructed to break up the contract. This was accomplished by suitable papers, under the date of March 28, 1874, and the common stock which was issued for and held by trustees, for the purpose of controlling the management of your company as to matters contemplated in the agreement, was released, and distributed among its owners in exchange for their income certificates. * * * *

Leighton Bridge & Iron Works,

ROCHESTER, N. Y.

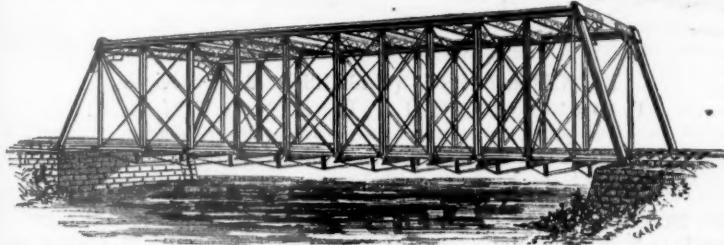
Wrought-Iron Riveted Lattice Railroad and Highway Bridges.



Wrought-Iron Riveted Lattice Railroad and Highway Bridges.
Bridge & Turn-tables, etc.,
also Specialties in
IRON CIVIL ENGINEERING AND OTHER WORKS.

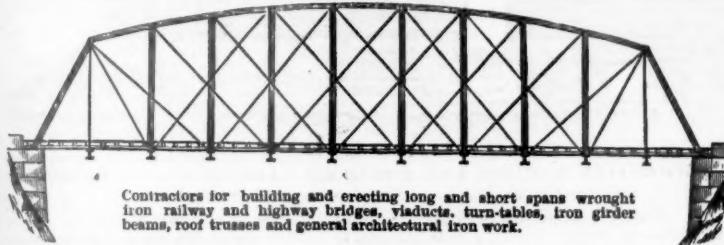
MANUFACTURE WIRE, PIPE AND GENERAL IRON WORK

WROUGHT-IRON BRIDGE CO.

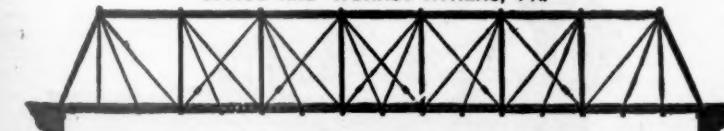
D. HAMMOND, President.
WM. BRITTON, Secretary.Office and Works,
CANTON, O.

JOB ABBOTT, H. G. MORSE, Engineers.

Manufacturers and Builders of all Wrought-Iron Railway and Highway Truss, Arch and Swing Bridges, Plate and Lattice Girders, Iron Roofs, Turn-Tables, Iron Piers and Trestles. Have over TWENTY-FOUR MILES of their IRON BRIDGES now in use in twenty-four different States and Canada. ILLUSTRATED ALBUM and estimates sent on application.

NATIONAL BRIDGE AND IRON WORKS.
General Office, 32 Hawley Street, Boston. Works at East Boston.

Contractors for building and erecting long and short spans wrought iron railway and highway bridges, viaducts, turn-tables, iron girder beams, roof trusses and general architectural iron work.

CHAS. H. PARKER and CAREY B. DUFF..... Proprietors.
C. H. PARKER, Engineer. A. W. PARKER, Superintendent.KELLOGG & MAURICE,
OFFICE AND WORKS: ATHENS, PA.

Iron and Wooden Bridges, Roofs, Turn-tables, Etc.

J. H. COFRODE. J. H. SCHAEFFER. F. H. SAYLOR.

J. H. COFRODE & CO.,
Engineers and Bridge Builders.
DESIGN AND CONSTRUCT IRON, WOODEN AND COMBINATION BRIDGE
AND ROOF TRUSSES, &c.,
OFFICE:
No. 530 Walnut Street, Philadelphia.

National Locomotive & Machine Works.

DAWSON & BAILY,

MANUFACTURERS OF

LOCOMOTIVES
NARROW-GAUGE LOCOMOTIVES A SPECIALTY.
OFFICE AND WORKS AT CONNELLSVILLE, PENN.

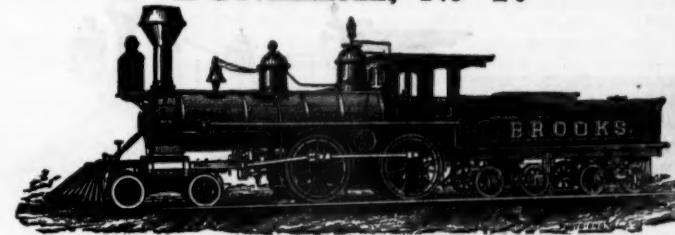
PORTER. BELL & CO.



EXCLUSIVE SPECIALTY
For Mines, Furnaces, Contractors' Use, and other Special Service; also Light and Heavy Styles of Narrow-Gauge Passenger and Freight.

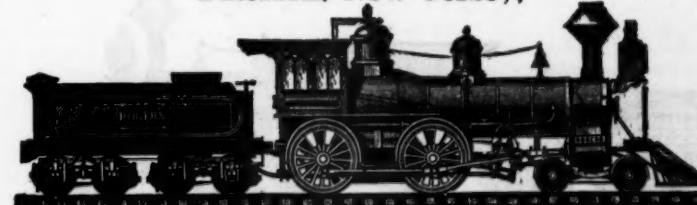
Office, No. 5 Monongahela House,
Works, A. V. R. R. and 50th St.,

PITTSBURGH, PENN.

BROOKS LOCOMOTIVE WORKS,
DUNKIRK, N. Y.

Orders Solicited for Locomotives Adapted for Every Class of
Railway Service.

M. L. HINMAN, Sec'y & Treas. H. G. BROOKS, Pres't & Sup't

ROGERS LOCOMOTIVE AND MACHINE WORKS
Paterson, New Jersey.

Having extensive facilities, are now prepared to furnish promptly, of the best and most approved description, either COAL OR WOOD BURNING

Locomotive Engines, and other Varieties of Railroad Machinery.

J. S. ROGERS, President. PATERSON, N. J. R. S. HUGHES, Secretary. WM. S. HUDSON, Sup't. THOS. ROGERS, Treas., 44 Exchange Place, New York.

LOCOMOTIVE ENGINE SAFETY TRUCK CO.
OF NEW YORK.

Proprietors of the following Letters Patent granted to Levi Biasell, Aug. 4, 1857, Nov. 2, 1858 (e),
and May 10, 1864.
DRAWINGS FURNISHED AND LICENSES GRANTED ON APPLICATION.

A. F. SMITH, President. M. F. MOORE, Sec'y and Agent,
ALBERT BRIDGES, Treas. No. 46, Cortlandt St., N. Y.

RHODE ISLAND LOCOMOTIVE WORKS,

PROVIDENCE, RHODE ISLAND.

W. S. SLATER,

E. P. MASON,

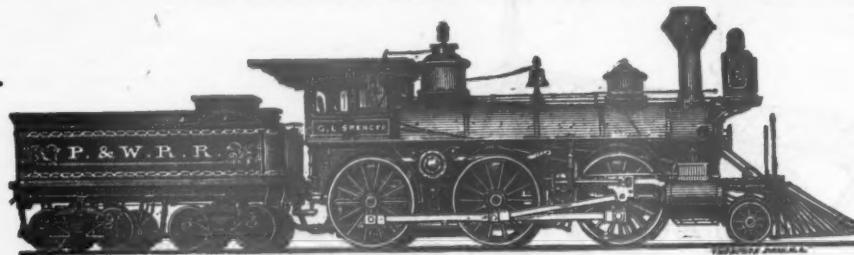
President.

B. W. HEALEY,

Sup't and

Gen'l Manager.

Treasurer.



W. H. FENNER,

Secretary and

Ass't Treasurer.

HINKLEY LOCOMOTIVE WORKS,



439 ALBANY STREET, BOSTON,

MANUFACTURE

LOCOMOTIVE ENGINES AND TENDERS, BOILERS AND TANKS,

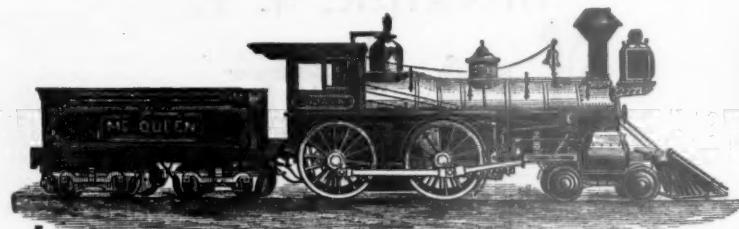
Copper Metal and Common Iron Castings, Brass and Composition Castings.

LOCOMOTIVES AND BOILERS REPAIRED.

Sole manufacturers of the "HINKLEY PATENT BOILER." All orders will be executed with dispatch.

ADAMS AYER, Pres't. F. L. BULLARD, Treas. FRANK D. CHILD, Sup't. GEO. F. CHILD, Secretary. H. L. LEACH, General Manager.

Schenectady Locomotive Works,



SCHEENECTADY, N. Y.

JOHN C. ELLIS, Pres. OHAS. G. ELLIS, Treas. WALTER McQUEEN, Supt.

DANFORTH LOCOMOTIVE AND MACHINE CO.

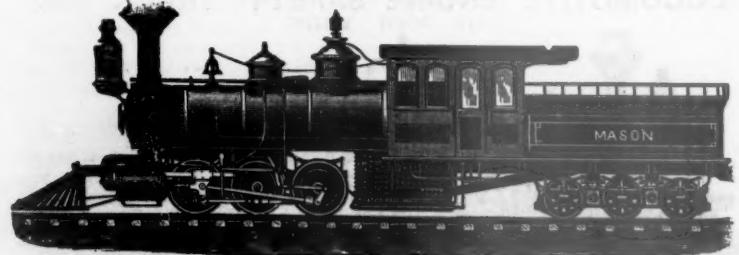
JOHN COOKE, President.
J. T. BLAUVELT, Vice-President.
A. J. BIXBY, Sec'y and Treasurer.
JAMES COOKE, Superintendent.

PATERSON, N. J.

New York Office, 52 Wall St.
H. A. ALLEN, AGENT.

MASON MACHINE WORKS,

TAUNTON, MASS.

WM. MASON, Pres. WM. H. BENT, Treas. FRED'K MASON, Agent.
BUILDERS OF ALL KINDS OF
LOCOMOTIVES,
INCLUDING DOUBLE-TRUCK LOCOMOTIVES FOR WIDE OR NARROW-GAUGE RAILROADS.
ALSO ALL KINDS OF COTTON MACHINERY.

BALDWIN LOCOMOTIVE WORKS.



BURNHAM, PARRY, WILLIAMS & CO., Philadelphia, LOCOMOTIVE ENGINES.

Especially Adapted to Every Variety of Railroad Service, including
Mining Engines and Locomotives for Narrow-Gauge Railways
All work accurately fitted to gauge, and thoroughly interchangeable. Plan, Materials, Work-
manship, Finish and Efficiency fully guaranteed.

GEO. BURNHAM.

CHAS. T. PARRY.

WM. P. HENSZEY.

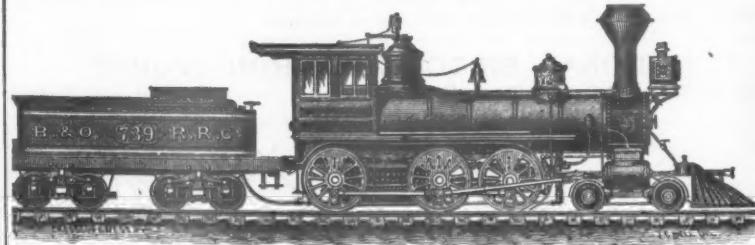
EDWARD H. WILLIAMS.

EDW. LONGSTRETH.

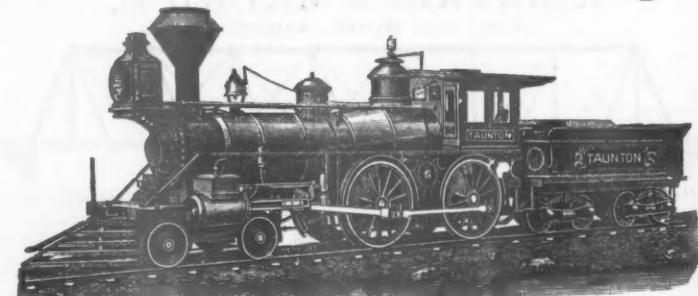
JOHN H. CONVERSE.

PITTSBURGH LOCOMOTIVE & CAR WORKS,

PITTSBURGH, PA.

MANUFACTURERS OF
LOCOMOTIVE ENGINES FOR BROAD OR NARROW GAUGE ROADS,
From standard designs, or according to specifications, to suit purchasers.Tanks, Locomotive or Stationary Boilers furnished at Short Notice.
D. A. STEWART, Pres't. J. A. DURGIN, Sup't. WILSON MILLER, Sec. and Treas.

Taunton Locomotive Manufacturing Co.,

P. I. PERRIN, Supt. ESTABLISHED IN 1846. HARRISON TWEED, Treas.
TAUNTON, MASS.

Manchester Locomotive Works,

MANUFACTURERS OF LOCOMOTIVE ENGINES.
All work accurately fitted to gauges. All parts duplicated and guaranteed of best material and work-
manship. JOHN A. BURNHAM, President.
ARISTAS BLOOD, Agent, Manchester, N. H. WM. G. MEANS, Treas., Boston, Mass.